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## Pre-Kindergarten Education: Is There a Relationship Between Pre-Kindergarten Participation and Student Achievement?

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The University of Southern Mississippi

PRE-KINDERGARTEN EDUCATION: IS THERE A RELATIONSHIP  
BETWEEN PRE-KINDERGARTEN PARTICIPATION  
AND STUDENT ACHIEVEMENT?

by

Carol Goldate Barlow

Abstract of a Dissertation  
Submitted to the Graduate School  
of The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

May 2012

ABSTRACT

PRE-KINDERGARTEN EDUCATION: IS THERE A RELATIONSHIP  
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by Carol Goldate Barlow

May 2012

The purpose of this study was to determine if the intervention of attending public school pre-kindergarten had an impact on student achievement as measured by the Louisiana Educational Assessment Program (LEAP) considering gender, socioeconomic status, and grade retention. This research study included both quantitative and qualitative data. Quantitative data included all 2009-2010 fourth-grade LEAP math and English language arts scaled scores collected from a specified public school district. To determine the impact of pre-kindergarten attendance on student achievement, the LEAP scores of students who attended public school pre-kindergarten were compared to LEAP scores of students in the same school district who did not attend pre-kindergarten. Qualitative data included completed teacher questionnaires which related to kindergarten readiness.

Frequencies and percentages were given for each of the independent variables. An independent  $t$  test found a statistically significant relationship between pre-kindergarten attendance and student achievement. An analysis of variance (ANOVA) procedure was used to analyze the data as a function of gender, socioeconomic status, and grade retention. The ANOVA comparing LEAP English language arts scaled scores by gender and pre-kindergarten attendance produced a significant main effect.

The ANOVA conducted using LEAP math scaled scores by gender was nonsignificant. The ANOVA comparing both the LEAP English language arts scaled scores and math scaled scores by socioeconomic status and pre-kindergarten attendance produced significant main effects. To determine the relationship between pre-kindergarten attendance and grade retention, a cross-tabulation of the data was performed. The qualitative data were analyzed using a simple frequency distribution.

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A Dissertation  
Submitted to the Graduate School  
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## CHAPTER I

### INTRODUCTION

Results drive decisions. Technology continues to advance at lightning speed that allows the tracking of progress to be at one's fingertips. Politicians frequently use education reform as campaign platforms. Political promises give educational improvement top billing. This trend is not a new phenomenon; rather it is a continued recognition of the importance of education. It is easy to find fault with the political leaders who attempt to change the current education system. However, education is not an area where one should settle for status quo. Federal, state, and local leaders have the responsibility of allotting monies in a hierarchy of importance. Federal lawmakers took action decades ago with passing the Elementary and Secondary Education Act (ESEA).

The ESEA, passed in 1965, emphasized equal access to education and established accountability. According to the Office of Superintendent of Public Instruction (OSPI) (n.d.a), "The law authorizes federally funded education programs that are administered by the states. In 2002, Congress amended ESEA and reauthorized it as the No Child Left Behind Act (NCLB)" (OSPI, n.d.a). The NCLB Act of 2001 states that "The purpose of this title is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments" (LaMorte, 2007, p. 470).

NCLB requires that states test students (Grades 3-8 and once in high school) in English language arts (ELA) and math. All students are expected to meet state standards in these subjects by 2014. One of the requirements of NCLB is that each school and district must meet adequate yearly progress (AYP) goals. Schools and

districts as a whole, including subgroups of students, are expected to meet AYP.

Subgroups include race/ethnicity, students with disabilities, students from low-income families, and limited English proficient students (OSPI, n.d.b). Continued failure to meet AYP places schools and entire districts at risk of state intervention. District and school leaders are continually searching for practices that will enable students to reach their full potential. In a time of recession, it is imperative that education dollars yield the greatest impact.

In March of 2010, the Obama administration released its blueprint for revising the ESEA. The website for the U.S. Department of Education (DOE) states, “The blueprint challenges the nation to embrace education standards that would put America on a path to global leadership.” (U.S. Department of Education, 2011). The DOE website offers the following quote from President Barack Obama:

It will be the goal of this administration to ensure that every child has access to a complete and competitive education – from the day they are born to the day they begin a career...because we know that the most formative learning comes in those first years of life. (U.S. Department of Education, 2011, p. 1)

According to the DOE, the proposed revision of the ESEA will support high-quality early learning approaches, support early learning professionals, and expand learning opportunities for young children (U.S. Department of Education, 2010).

As of September 2011, Congress had not rewritten the NCLB law. President Obama has “offered to lift the law’s most onerous provisions, including its 2014 deadline for bringing all students to proficiency in English language arts and math, for states that promise to follow his administration’s own school improvement agenda” (Dillon, 2011, para. 1). States that desire exemption from NCLB must file a waiver

outlining the accountability system they will use (Dillon, 2011, para. 3). Based on the NCLB law, state education leaders have spent the last decade establishing accountability measures and designing curricula in an effort to increase student achievement. Though some states may apply for a waiver, others may continue to follow the mandates of NCLB. Eugene Wilhoit, executive director of the Council of Chief State School Officers, explained that, “some states will probably not apply at all because they are wary of disrupting their current systems of school accountability when Congress is likely to thoroughly rewrite the law within the next couple of years” (Dillon, 2011, para. 18).

Supporting early learning has become more than rhetoric. Since the 19<sup>th</sup> century, there have been differing opinions on the level of support that federal and state governments should assume. The Pew Center on the States provides the following information that can assist government agencies in addressing important issues:

The Pew Center on the States is a division of The Pew Charitable Trusts that identifies and advances effective solutions to critical issues facing states. Pew is a nonprofit organization that applies a rigorous, analytical approach to improve public policy, inform the public, and stimulate civic life.

The Pew Center on the States grew from the recognition that America’s success and prosperity depends upon the strength of the states. Our purpose is to help build high-performing states that work efficiently and effectively to deliver better results, achieve long-term fiscal health through budget discipline and make smart investments in programs that provide the strongest returns.

We take an in-depth, nonpartisan approach to track and report on what happens across the 50 states and the District of Columbia—using evidence to

determine which policies work and which do not. When the facts are clear, Pew and our partners advocate for practical reforms, including federal policies that affect states in areas such as elections, corrections, pre-kindergarten, children's dental health and voluntary home-based programs for new and expectant families. (Pew Center for the States, n.d., para. 1-3)

One of the projects that emerged from the Pew Center on the States is Pre-K Now. "Pre-K Now is a public education and advocacy campaign that advances high-quality, voluntary pre-kindergarten for all three and four year olds" (Pre-K Now, 2010b, para. 1). According to Pre-K Now, the evolution of pre-K began in 1830 in Boston, Massachusetts, with the Primary School Committee rejecting a petition to formally incorporate 'infant schools' into the city's public schools. Despite the ruling, many 3- and 4-year-olds attended public schools with their older siblings. Throughout the 19<sup>th</sup> century, additional states took action to provide a free public education to preschool children. Wisconsin made a commitment to provide a free education to all children between the ages of 4 and 20 years. In an effort to counteract poverty, New York City established 58 infant schools.

In 1912, "the U.S. Children's Bureau was created to investigate and report 'upon all matters pertaining to the welfare of children and child life among all classes of our people.' The first federal agency for children, it is now located in the Administration for Children and Families at the Department of Health and Human Services" (Pre-K Now, 2010a). In 1913, Dr. Maria Montessori visited the United States. Her educational methods intensified the debate regarding child care and early education. With the Great Depression came the emergence of public nursery schools. Public nursery schools were created as a method of creating jobs for unemployed

teachers. Parents receiving federal assistance were allowed to enroll their children in these nursery schools. However, when the U.S. economy improved, funding for the nursery schools was terminated.

To meet the needs of disadvantaged 3- and 4-year-olds, Project Head Start was created in 1965. Twelve years later, Alaska began appropriating funds to expand Head Start. In 1980, “the federal Department of Education is created, helping to spur the creation of several state-funded, targeted pre-K programs over the following 25 years. Many states also began supplementing Head Start with state funds to increase access” (Pre-K Now, 2010a).

In 1983, a major reform effort was made by the U.S. Department of Education’s National Commission on Excellence in Education to improve student achievement. A Nation at Risk is considered the incentive for current reform efforts. However, early education was not addressed in A Nation at Risk. By the middle of the 1980s, Illinois, Maine, Michigan, Texas, West Virginia, Washington, and Wisconsin recognized the importance of pre-K and established a varying degree of programs. Louisiana began funding the Model Early Childhood Program through annual state appropriations.

The last decade of the 20<sup>th</sup> century brought many changes to preschool education. By 1990, research indicated that development of the brain during the first five years of life was critical for learning. This research forced lawmakers and educators alike to take a closer look at funding for preschool programs. Then, in 1992, Louisiana provided funding for the Starting Points pre-kindergarten program. Georgia, New York, and Oklahoma joined Louisiana in making provisions for pre-K programs.

With the dawning of a new century came renewed vigor to improve the status of education in the United States. Some states continued to take no fiscal responsibility



for pre-K programs. However, other states took bold actions in the area of pre-K education. Louisiana established the LA4 pre-K program for low-income 4-year-olds and created the Non-Public Early Childhood Development Program. This program was developed in an effort to reimburse approved non-public pre-K programs for the children they serve.

In 2002, the Pew Charitable Trusts granted approximately \$4 million to create a new advocacy center for pre-K (Pre-K Now). Pre-K Now works at the federal level to expand support for pre-k and to improve existing state-level initiatives. With the signing of the No Child Left Behind law, January 8, 2002, became a monumental day for education reform. States had to evaluate their existing education programs and make improvements that would meet the No Child Left Behind mandates. Many states decided to establish pre-K programs or to expand up on existing programs. Arkansas, Florida, Georgia, Illinois, Pennsylvania, and Texas made promising strides in the effort to provide pre-K education. In 2008, “lawmakers approved pre-K for all in the state of Louisiana, increasing income eligibility in incremental steps until the 2013-2014 school year, when the state’s *LA4* program will be available for all four year olds regardless of income” (Pre-K Now, 2010a). As history indicates, early childhood education has been subjected to many budget crises. Some states have committed to providing pre-K for all children while other states vacillate. Though not free of problems, Project Head Start has been a staple since 1965.

Head Start began as an eight-week summer program designed for low-income children. In *The Sandbox Investment*, Kirp (2007) stated the following:

Live by evaluation, die by evaluation—almost from the outset, researchers were scrutinizing Head Start. And, even though the program was supposed to

accomplish many things, among them boost to children's self-confidence and improving family relationships, a single measure, the IQ score, became the benchmark of success. (Kirp, 2007, p. 61)

The initial Head Start program showed positive results; however, by 1969 a Westinghouse Learning Corporation report indicated "no lasting effects" (Kirp, 2007, p. 62). The Westinghouse report supported skeptics' beliefs (Kirp, 2007). Though decades have passed, proponents and opponents of pre-K remain diligent in their credence.

The National Council on Research Institute of Medicine (NCRIM) (2000) explained that from conception to the time a child enters kindergarten, he or she absorbs and retains information at a greater pace than at any other time in his or her life. According to NCRIM, by the time a child is 6 or 7 years old he has lost the crucial first years of learning (National Research Council Institute of Medicine, 2000). Overwhelming evidence indicates children who attend pre-K have a higher success rate as they enter kindergarten than their peers who have not attended a pre-K program. Despite this evidence, the National Institute for Early Education Research (NIEER) reports that 12 states have no regular state preschool program and 32 of the 38 states that offer pre-k do so based on income restrictions (NIEER, 2009). Since the inception of Project Head Start in 1965, income has always, and continues to be, a condition of pre-K enrollment. The very poor are offered pre-K funded by federal, state, and/or local monies while the very rich rally to be accepted into the best preschools in the nation. Meanwhile, the children from middle socioeconomic families often slip between the cracks.

More than 50 years ago, segregation ended in schools receiving federal funds. Yet, in the second decade of the 21<sup>st</sup> century, a different type of segregation exists. Pre-K programs based on income are segregating children. The Social Learning Theory states that children learn through observation. “Dewey believed that children learn best when they interact with other people, working both alone and cooperatively with peers and adults” (Mooney, 2000, p. 5). Is it in the best interest of low-income children to be placed in a preschool environment with children from the same socioeconomic bracket? Would these children—and all children—be better served in high-quality, state-funded universal pre-kindergarten (UPK) programs? “By itself, cheap child care with low standards may reach more families, but it is bad policy, and may even harm child development” (NIEER, 2009, p. 9).

In an effort to provide lawmakers with the tools needed to make pre-K a fiscal priority, the continuation of research is imperative. Research indicates that UPK would actually save taxpayers money over a given period. NIEER (2011) estimates the annual cost of preschool per child is \$8,703. NIEER arrived at these results by using data from the Chicago Child Parent Center and the Perry Preschool Project. Both programs found that participants were less likely to be retained in school, less likely to need remedial help, less likely to be arrested, and less likely to need social services. For every dollar invested, the return is \$7. “This yields an average benefit estimate across all children of \$25,000 per child” (NIEER, 2011, p. 1).

In a recessive economy, leaders must look at areas where spending can be diminished. More importantly, leaders must determine what resources will have a positive long-term impact. Over the course of a decade the Montgomery County Public School (MCPS) system in Maryland has made impressive gains in student achievement.

Subgroups of students showed double-digit declines in achievement gaps and had a 90% high-school graduation rate. “. . . MCPS used local and federal dollars to craft, implement and improve a system-wide education reform strategy built on a foundation of providing high-quality pre-kindergarten” (Pre-K Now, 2010c, para. 2).

According to Urahn (2009), “Pre-K returns up to \$7 for every dollar invested, and four decades of research show that it provides the foundation for building a strong workforce for future generations” (para. 1). NIEER conducted a study on high-quality pre-K programs in five states (Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia). The study found that despite differences in ethnicities and socioeconomics, children made significant gains (Barnett, Jung, Wong, Cook, & Lamy, 2007). These types of results are typical among studies and indicate that the quality of pre-K programs is essential to long-term achievement. According to a study conducted by Sammons, Sylva, Melhuish, Siraj-Blatchford, Taggart, and Hunt (2008), “Children gained the most benefit from having attended high-quality preschool provision, but medium-quality provision also led to better mathematics and social/behavioral outcomes in year 6 than low-quality or no preschool (the ‘home’ group)” (p. 2).

UPK is not a new concept; however, it is not a given in our country. There is a broad difference among our states in funding for pre-K. Some states have made, and continue to make, pre-K a priority while other states have not allotted any money for pre-K. This disparity puts children at very different starting points as they enter kindergarten. One must not look at where the country is today; rather one must always look to the future. It is essential for low-income children to enroll in pre-K, yet half a million of these children are not receiving a pre-K education (Urahn, 2009). Further,

pre-K should not be afforded solely to low-income children. The right to a state-funded, high-quality pre-K education should be the right of every child.

#### Statement of the Problem

Though 38 states offer pre-K, 12 states have no allotment for pre-K education. Mississippi is included in the 12 states that have no funding for pre-K. Thirty-two of the 38 states that fund pre-K require that students come from low-income families. Although Louisiana ranks 12<sup>th</sup> in pre-K access by state, spending actually decreased in 2008-2009 (National Institute for Early Education Research, 2009).

This study focused on a large suburban school district located in a southern state. The district has a population of approximately 231,495. Of this number, 6.8% are under the age of 5 years. According to the United States Census Bureau (2011), the median household income in 2008 was \$57,129.

During the 2009 school year, the district enrolled 1,327 children in pre-K. During this same period, 45% of the district's students were eligible to receive free or reduced lunch (KIDS Count Data Center, 2009a). Based on state statistics, children in poverty range from a high of 57% in a district in the northern part of the state to a low of 15% in the district evaluated for purposes of this study (KIDS Count Data Center, 2009b).

The targeted district offers “a limited number of pre-kindergarten programs offered for four-year-old children who are eligible to enter public school kindergarten the following year. These programs are funded by federal and state grants (*LA 4*, Title I, 8g) and are primarily for students considered either economically or academically at risk” (St. Tammany Parrish School Board, 2009c, para. 4). As with most states, the majority of middle-class children are not eligible to attend a state-funded pre-K

program. In addition, there are many low-income children and academically at-risk children who are not receiving a pre-K education due to limited availability and funding.

It is often said that the children of today are the leaders of tomorrow. It is of utmost importance to decide the best ways to spend dollars designated for education. It is equally as important to decide where any additional monies would provide the most benefit. Pre-K for children from lower socioeconomic backgrounds is essential. However, such a targeted program will have neither the positive peer group effects nor the social integration benefits of universal ECE [Early Childhood Education] (Ashford, 2007).

Americans seek greatness. Settling for average or good in a country known for greatness would suggest failure to all future generations. Should additional monies be invested in UPK? Should monies being budgeted for Head Start and state monies be reconfigured to work in consortium to provide UPK? The answers to these questions should concern all cultures. The future of this great country depends on today's children. This researcher believes it is imperative to investigate all angles that could possibly improve student achievement.

#### Purpose of the Study

The purpose of this study was to determine if children who attended pre-K performed significantly better academically than children who did not attend pre-K. The study focused on fourth-grade standardized test scores. LEAP math and English language arts scores were used. The scores of children who had attended pre-K were compared to scores of children who had not attended pre-K. In an effort to determine if a particular gender reaped the most benefits from attending pre-K, state standardized

test scores were further disaggregated. This study also investigated the correlation between socioeconomic status, pre-K, and student achievement.

Another vital component of this study was to examine the retention rate of students who had attended pre-K and students who had not attended pre-K. One final component of this study was teacher questionnaires. Kindergarten teachers were asked to complete questionnaires to determine their perceptions of students who entered kindergarten with a pre-K foundation versus those who entered kindergarten without a pre-K foundation. This study was conducted in an effort to provide valuable information regarding pre-K education to the school district and the state Department of Education.

#### Research Questions

This study addressed the following questions:

1. Is there a relationship between pre-K attendance and student achievement?
2. Is there a relationship between gender, pre-K attendance, and student achievement?
3. Is there a relationship between the socioeconomic status of students who attended pre-K and student achievement?
4. Is there a relationship between pre-K attendance and student retention?
5. Do students who attended pre-K display better kindergarten readiness skills than their peers who did not attend pre-K?

### Definition of Terms

For purposes of this study, the following terms are defined:

*Adequate yearly progress (AYP)*: the minimum level of achievement that a school must achieve within a set amount of time (Louisiana Department of Education, 2010a).

*Consortium*: “an agreement, combination, or group (as of companies) formed to undertake an enterprise beyond the resources of any one member” (Consortium, 2011).

*Disaggregated*: the separation of test scores into parts.

*District performance score (DPS)*: individual student scores on LEAP, iLEAP, and GEE as well as attendance, dropout, and graduation rates. DPS uses the same formula as that of the SPS with only one year of data (Louisiana Department of Education, 2010e).

*8(g) Student Enhancement Block Grant Program*: a program that serves “students who are at risk of not being prepared for Kindergarten. Priority is given to students from economically disadvantaged families” (Louisiana Department of Education, 2010c, para. 1).

*Ethnicity*: “large groups of people classed according to common racial, national, tribal, religious, or cultural origin or background” (Ethnic, 2011).

*Kindergarten readiness*: skills a child should possess upon entering kindergarten.

*LA4*: a program specific to Louisiana that provides funding to districts providing pre-K services to disadvantaged 4-year olds with a 6-hour-a-day program (Louisiana Department of Education, 2010b).



*Louisiana Educational Assessment Program (LEAP)*: the high stakes test that measures students' knowledge in English Language Arts, math, science, and social studies. Students in Grades 4 and 8 take the LEAP test (Louisiana Department of Education, 2010e).

*Recovery school district (RSD)*: Louisiana's state intervention model that intervenes when schools do not make AYP for at least four consecutive years (Louisiana Department of Education, 2010h).

*School performance scores (SPS)*: Scores given to schools based on student test scores and attendance (kindergarten through 5<sup>th</sup> grade formula). Schools with Grades 7 and 8 receive SPS based on student test scores, attendance, and dropout rates. High schools receive SPS based on test scores and graduation rates (Louisiana Department of Education, 2010b).

*Title I*: a federal program that provides financial assistance to local education agencies and schools with high percentages of poor children.

*Universal pre-kindergarten (UPK)*: a formal early childhood education for all 4-year-old children free of charge.

### Delimitations

Several limitations were imposed in this study. These limitations included, but were not limited to, the following factors.

1. Data was acquired solely from one school district.
2. Testing conditions were not exactly the same from school-to-school.
3. The researcher was unable to determine if a child had excessive test anxiety, which could have resulted in test results becoming skewed.
4. The researcher was unable to evaluate a child's health on the day of testing.

5. One could have taken the test while experiencing medical impairments.
6. Teacher questionnaires were limited to kindergarten teachers who are willing volunteers.

#### Assumptions

The researcher made specific assumptions while conducting this study. These assumptions are as follows:

1. Test data had been recorded accurately.
2. All teachers answered interview questions honestly and to the best of his or her knowledge.

#### Justification

This study was conducted in an effort to add to the existing evidence that indicates there is a positive relationship between pre-K and student achievement. The University of Colorado's Gregory Camilli joined a team of researchers from Rutgers to analyze 123 studies of early childhood interventions.

Consistent with the accrued research base on the effects of preschool education, significant effects were found in this study for children who attend a preschool program prior to entering kindergarten. Although the largest effect sizes were observed for cognitive outcomes, a preschool education was also found to impact children's social skills and school progress. (Camilli et al., 2010, p. 580)

Wat (2010) examined the outcomes of studies from several different states. Data collected in California's Los Angeles, Fresno, and Sacramento counties "... found that participation in pre-K significantly improved early literacy, language and math skills" (p. 2). Wat's study in Louisiana ascertained that "children who attended *LA4* were as much as 36 percent less likely to be held back in kindergarten and were as

much as 49 percent less likely to be placed in special education through second grade” (Wat, 2010, p. 3).

Though studies report positive results for children attending pre-K, many states provide very limited or no funding for such programs. “Despite the recession, every Deep South state except Louisiana increased their state Pre-K budget during the last two years” (Southern Education Foundation, 2010a, p. 1). “Mississippi is the only Southern state that has no state-supported pre-kindergarten program” (Southern Education Foundation, 2010a, p. 1).

Research indicates that children raised in poverty enter school with an entirely different mindset than their peers from more affluent backgrounds. According to Eric Jensen the most significant risk factors affecting children raised in poverty include emotional and social challenges; acute and chronic stressors; cognitive lags; and, health and safety issues (2009, p. 91). Jensen states, “...early childhood interventions can be quite potent in reducing poverty’s impact” (2009, p. 177).

The book, *How the Brain Learns*, suggests that new research has, “Reaffirmed that the human brain continually reorganizes itself on the basis of input. This process, called *neuroplasticity*, continues throughout life but is exceptionally rapid in the early years” (Sousa, 2011, pp. 4-5). Sousa explains that “the young brain responds to certain types of input to create or consolidate neural networks” (2011, pp. 23-24). Sousa suggests by the age of 12, if one does not hear words, a language may never be learned (2011). David Sousa continues by stating, “The window for developing emotional control seems to be from two to 30 months” (Sousa, 2011, p. 26). The increased knowledge of brain development magnifies the need for early education for *all* children.

Additional studies are paramount to provide lawmakers with the evidence needed to fund UPK. According to the Southern Education Foundation (2010b),

In December 2009, when the jobless rate spiked to include more than one out of every 10 Mississippi adults, the unemployment rate stood at less than 5 percent for adults with a college degree and 8.5 percent for those with some college education. The unemployment rate for high school dropouts was three times higher than the rate of those with a college degree. Education makes a big difference in jobs and income – even in a distressed economy. High-quality Pre-K is the first, essential step toward building the educated workforce that will enable a better economic future for Mississippi. (p. 2)

A continuation of studies on pre-K education is essential. Lawmakers must carefully examine the ramifications of a society in which children are not provided with a pre-K education. Choose any one of the following measures enumerated by Perry, and one can rationalize the need for additional studies in pre-K education. In writing about the Perry Preschool study, Kirp (2007) stated the following:

What's most extraordinary is that the impact of those early years has persisted into middle age. Pick almost any measure one might care about—education, income, crime, family stability—and the contrast between the two groups is striking. (p. 53)

In an era where resources are shrinking and monies must be spent on programs that result in the best possible gains, continued research is essential. “After more than a decade of expansion in early-childhood services, states exploring how to best target their resources are looking more closely at child-development research for guidance” (Jacobson, 2008, p. 17).

### Summary

Numerous pre-K programs exist. The majority of these programs are only available to children from low-income families. Thirty-eight states offer some form of pre-K. Thirty-two of these states require a child to be in the low-income bracket in order to be eligible for the pre-K program. Twelve states have no funding in place for pre-K. The programs offered differ vastly in quality. Arming lawmakers with an arsenal of information is necessary to steer them in the direction of UPK.

This study investigated the relationship between pre-K and student achievement. This researcher examined LEAP test scores, student retention, gender, and socioeconomic status of fourth-grade students. The students were chosen randomly regardless of pre-K attendance. In an effort to determine if there was a correlation between pre-K and student achievement, statistical analysis of the independent variables were conducted. Results of this study will enable the district to determine if additional local funds should be allocated for pre-K.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

The benefits of pre-K have been debated by educators, parents, children's advocates, and policymakers for decades. With the inception of Head Start, policymakers acknowledged the need for preschool education outside of the home. Children from the lowest socioeconomic backgrounds were found to lag behind their peers upon entering school; therefore, policymakers offered Head Start as a solution. Head Start was not an option for families who had a slightly higher income but were unable to afford a quality preschool program for their children.

Decades after the first child entered Head Start, the problem of providing pre-K for all persisted. Through the years, many states recognized the importance of pre-K and have provided funding, while other states have made no provisions. The achievement gap among subgroups of students continued to be significant. The NCLB Act required that all students, including those from low-income families, reach a level of proficiency on high stakes tests. In 2001, when the NCLB Act was signed, the same problems persisted as when Head Start came on the horizon in 1965; policymakers had not discovered a solution to provide funding for a preschool education for every child. Advocates continue to believe that UPK is the answer to providing the foundation necessary for children to grow up to be productive members of society.

The short- and long-term benefits of high-quality pre-kindergarten have been well documented by researchers for the last 50 years. By now, even many outside the education field have heard about the academic and lifetime gains and the significant returns on investment yielded from the High/Scope Perry Preschool Project and the Chicago Child-Parent Centers. (Wat, 2010, p. 6)

The information that follows will examine what past research has shown about the relationship between pre-kindergarten and student achievement. The following pages are broken down into sections. The first section begins with a review regarding the status of state-funded pre-K programs. The single factor that is keeping UPK from becoming a reality is funding. Armed with this knowledge, the second section explores what others have discovered concerning the fiscal relationship between pre-K and student achievement. The last section analyzes what past research has ascertained regarding the relationship between pre-K and student achievement. More specifically, this researcher will delve into the short- and long-term benefits of pre-K, looking specifically at kindergarten readiness, gender, socioeconomics, high-stakes testing success, and student retention.

### Theoretical Framework

John Dewey, Maria Montessori, and Jean Piaget set the foundation for UPK. According to Mooney (2000), “These early theorists all agreed that children learn from doing and that education should involve real-life material and experiences and should encourage experimentation and independent thinking. These ideas, now quite common, were considered revolutionary in Dewey’s day” (p. 4).

John Dewey is known for his Progressive Education Theory.

As a progressive educator he shared with Vygotsky, Montessori, and Piaget the central ideas of that movement: education should be child centered; education must be both active and interactive; and education must involve the social world of the child and the community. (Mooney, 2000, p. 4)

Dewey's theory provides substance for UPK advocates. It is the belief of John Dewey that "children learn best when they interact with other people, working both alone and cooperatively with peers and adults" (Mooney, 2000, p. 5).

Piaget is best known for his stages of cognitive development. "The first stage of cognitive development Piaget called the *sensorimotor* stage. During this time the baby relies on his senses and physical activity to learn about the world" (Mooney, 2000, p. 64). According to Piaget, "after the sensorimotor stage, children's cognitive development enters the preoperational stage, which extends from the second year of life through age seven or eight. The preoperational stage is when children's thinking differs most from adult thought patterns" (Mooney, 2000, pp. 68-69). At this stage children are enrolled in pre-K, and teachers are encouraged to plan open-ended activities and ask open-ended questions.

The third stage of cognitive development is the concrete operational stage. "At this age (usually from about seven through eleven or twelve) children possess the characteristic of *reversibility*, which allows them to reverse the direction of their thought" (Mooney, 2000, p. 78). At this stage children begin to think more abstractly.

"The final stage Piaget outlined is *formal operations*. This stage begins between ages eleven and sixteen and is marked by the ability to think logically and in hypothetical terms" (Mooney, 2000, p. 78). "Here we become increasingly competent at adult-style thinking. This involves logical operations and using them in the abstract, rather than concrete" (Boeree, n.d., para. 43).

The above mentioned theories offer outstanding credence to support pre-kindergarten; however, one must also examine Albert Bandura's Social Learning Theory. "Bandura's Social Learning Theory posits that people learn from one another,



via observation, imitation and modeling. The theory has been called the bridge between behaviorist and cognitive learning theories because it encompasses attention, memory, and motivation” (Social Learning Theory [Bandura]/Learning Theories, n.d., para. 1). The Social Learning Theory presents a valid argument for UPK. Though placing children from lower socioeconomic families into a Head Start classroom is a noble gesture, it is not exposing them to children from different backgrounds and perspectives. Children from high-income, middle-income, and low-income families should not be segregated. Children should be integrated into UPK so they can observe and learn from each other’s unique perspectives.

#### Evaluations of State-Funded Pre-K Programs

According to the National Institute for Early Education Research (2009), 12 states provided no funding for pre-K. On the other end of the spectrum, Texas spent \$760 million for children to have a quality pre-K education. The top 10 states serving 4-year-olds in 2009 were Arkansas, Florida, Georgia, New York, Oklahoma, South Carolina, Texas, Vermont, West Virginia, and Wisconsin. The states providing no programs in 2009 were Alaska, Hawaii, Idaho, Indiana, Mississippi, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Utah, and Wyoming. In five states, funding was below \$2,500 per child, while 14 states exceeded \$5,000 per child (National Institute for Early Education Research, 2009).

In the 2008-2009 school year, state funding for pre-K did not increase enough to keep up with inflation. This is particularly disturbing because it ended a two-year departure from the previous downward trend in real spending per child. Adequate funding is necessary to ensure that children receive an effective preschool education of lasting value. A small one-year dip hardly constitutes a

disaster, but given states' budgetary problems this could be the start of a new downward trend that will erode the value of these programs and turn them into ineffective, cheap substitutes for real education. (National Institute for Early Education Research, 2009, p. 13)

According to the Southern Education Foundation (2010b),

The South continues to lead the nation in 2010 in only one major area of public education: the enrollment of three- and four- year-old children in early education programs. According to the latest national data, the percent of children in state-supported pre-kindergarten (Pre-K) across the 15 states of American South remains twice as large as the rest of the nation. During the two years, despite a severe recession, Southern states found ways to continue and, in some instances, to expand Pre-K enrollment and funding. In addition, more than half the states with the nation's highest standards for quality in Pre-K programs remain in the South. (p. 5)

In 2008, 20% of the South's preschool children were in a state-supported pre-K program (Southern Education Foundation, 2010b). During that same time period, the national rate for children in state-supported pre-K programs was 14%. In 2008, Louisiana ranked 15<sup>th</sup> for pre-K enrollment (Southern Education Foundation, 2010b).

Since 2008, several Southern states continued efforts to expand Pre-K enrollment despite worsening economic conditions. Overall, the South increased enrollment by an estimated nine percent—enrolling almost 55,000 children in state-supported Pre-K. Much of these gains were in Florida or the Deep South States—Alabama, Arkansas, Georgia, Louisiana, South Carolina, and Tennessee. Enrollment increased by an estimated average of 18 percent in these

six states with the most significant gains in Arkansas, Louisiana, and Alabama. (Southern Education Foundation, 2010b, p. 7)

Georgia led the way for pre-K in the South by being the first state to establish a pre-K program funded entirely with lottery revenues. The first few years of the program were opened only to low-income children. However, in 1995, Georgia expanded the program and became the first state to offer pre-K to all 4-year-olds (Southern Education Foundation, 2007). According to the Southern Education Foundation, Georgia in 2008 ranked fourth for the highest enrollment rates in state-supported pre-K classes (Southern Education Foundation, 2010b). Two southern states had surpassed Georgia (Oklahoma and Florida) in terms of highest enrollment rates in state-supported pre-K classes (Southern Education Foundation, 2010b).

#### *Alabama*

“Alabama began offering state-funded preschool to 4-year-olds through the Alabama Pre-Kindergarten Program in 2000” (National Institute for Early Education Research, 2009, p. 30). Other than the age criteria, there are no specific eligibility requirements to enroll a child in pre-K in the state of Alabama. With only 3,384 children, enrollment numbers are low. Approximately \$5,134 is allotted for children enrolled in pre-K (National Institute for Early Education Research, 2009).

Sites for the program are selected through a competitive grant process and include public schools, private child care centers, Head Start centers, faith-based centers, and colleges and universities. Grantees must provide a local match of their grant award, which varies across grantees and program years. The state aims to have at least one classroom per county; currently, classrooms are offered

in all but three counties. (National Institute for Early Education Research, 2009, p. 30)

### *Alaska*

Prior to the 2009-2010 school year, Alaska did not have a state-funded pre-K program (National Institute for Early Education Research, 2009). “In April of 2009, the Alaska Legislature provided EED with \$2,000,000 in General Funds for a pilot pre-kindergarten project” (Alaska Department of Education and Early Development, 2011, p. 10). A process was established as to how districts could apply for the funding. Twelve districts submitted applications, with six of those 12 being selected to participate in the pre-K pilot program (Alaska Department of Education and Early Development, 2011). “Fifteen classrooms were supported in this initial pilot project under these grantees. EED initially projected serving approximately 300 children. However, the actual number served under these grantees was 200” (Alaska Department of Education and Early Development, 2011, p. 11).

### *Arizona*

“In 1991, Arizona began funding prekindergarten programs, and in 1996 began using the Arizona Early Childhood Block Grant (ECBG) as a source of funding (National Institute for Early Education Research, 2009, p. 34). Sixteen percent of school districts offered a state program, with an enrollment of approximately 5,447 students (National Institute for Early Education Research, 2009). The total state spending for pre-K exceeded \$12 million with \$2,247 spent per child enrolled (National Institute for Early Education Research, 2009). For a child to participate in an Arizona pre-K program, an income requirement at or below 185 % of the federal poverty level must be met (National Institute for Early Education Research, 2009).

### *Arkansas*

In 2009, Arkansas enrolled approximately 20,476 students in preschool programs; however, to qualify for enrollment, children had to meet an income requirement of 200% below federal poverty level (National Institute for Early Education Research, 2009).

The Arkansas Better Chance (ABC) program began in 1991 as part of a state education reform initiative. ABC was initially funded entirely through a dedicated sales tax, with additional funding from an excise tax on packaged beer from 2001-2007. ABC also receives some federal funding, but at least 40 percent of the total program funding must consist of local contributions.

(National Institute for Early Education Research, 2009, p. 36)

### *California*

In 1965, California made state-funded preschools available through the California State Preschool Program (National Institute for Early Education Research, 2009). “Participation in the State Preschool Program is limited to 3- to 5-year-old children from families below 75 percent of the state median income or to children who have experienced or are at risk for abuse, neglect, or exploitation” (National Institute for Early Education Research, 2009, p. 38). California has other preschool services, such as the Prekindergarten and Family Literacy Program and General Child Care Program, which were consolidated to form the California State Preschool Program Act (National Institute for Early Education Research, 2009). The state of California spent approximately \$3,681 per child enrolled in preschool (National Institute for Early Education Research, 2009).

### *Colorado*

Colorado's first preschool program was instituted in 1988. The program originally targeted children in need of language development. "In 1992 the General Assembly passed Senate Bill 92-189, which resulted in the continuation of the Colorado Preschool Program as a permanent program" (Colorado Department of Education, 2010, p. 3). School districts do not have to participate in the preschool program; however, in the 2010-2011 school year, 169 (out of 178) school districts will serve preschool children (Colorado Department of Education, 2010). "The number of children who can be served in the Colorado Preschool Program is capped at a level set by the State Legislature" (Colorado Department of Education, 2010, p. 3). According to the 2009 State Preschool Yearbook, 18,475 children were served in preschool, with state spending per child totaling \$2,237. To be eligible to attend a preschool program, children must be at 185% below the federal poverty level (National Institute for Early Education Research, 2009).

### *Connecticut*

Connecticut created the School Readiness Program in 1997. At least 60% of the children enrolled in the readiness program must be from income levels at or below 75% of the state median income (National Institute for Early Education Research, 2009). In 2009, state spending on pre-K exceeded \$72 million (National Institute for Early Education Research, 2009). Thirty-eight percent of the state's school districts offer a pre-K program with an enrollment of 8,865 children (National Institute for Early Education Research, 2009).

### *Delaware*

In 1994, Delaware established the Early Childhood Assistance Program (ECAP) to ensure that children living below the poverty level would have access to pre-K (National Institute for Early Education Research, 2009).

Delaware recognizes that what children experience from birth to age five has a direct impact on their future success in school and life. We are committed to ensuring that all young children enter school prepared to succeed. *Early Success: Delaware's Childhood Plan* outlines what we need to accomplish to meet this goal. It defines the components of a comprehensive early childhood system to support Delaware's youngest children and their families. (Delaware Department of Education, n.d, p. 1).

In 2009, Delaware had a total of 843 students enrolled in a state pre-K program. State spending was approximately \$6,795 per child (National Institute for Early Education Research, 2009).

### *Florida*

“In 2002, Florida voters approved an amendment to the state's constitution to provide a high quality prekindergarten learning opportunity for every four-year-old. This program is referred to as Florida's Voluntary Prekindergarten (VPK) Education Program” (Florida Department of Education, n.d.a, para. 1). A child is eligible to attend Florida's VPK program providing he or she turns 4 years of age by September 1 (Florida Department of Education, n.d.b). In 2009, total state program enrollment was 147,762, with approximately \$2,448 being spent per child enrolled (National Institute for Early Education Research, 2009).

### *Georgia*

In 1992, Georgia's voters passed a proposal for the Georgia Lottery for Education (Georgia Department of Early Care and Learning, n.d.). As part of the bill, the governor supported the development of a preschool program (Georgia Department of Early Care and Learning, n.d.). "The Pre-K Program began as a pilot program serving 750 at-risk four-year-old children and their families at 20 sites in 1992" (Georgia Department of Early Care and Learning, n.d., para. 3). In 1995, the program expanded and was open to all eligible 4-year-old children (Georgia Department of Early Care and Learning, n.d.). During the 2009-2010 school year, 82,000 children were enrolled in Georgia's pre-K program, with services costing the state approximately \$341,715,959 (Georgia Department of Early Care and Learning, n.d.).

### *Hawaii*

Hawaii has no state-funded preschool initiative (National Institute for Early Education Research, 2009).

### *Idaho*

Idaho has no state-funded preschool initiative (National Institute for Early Education Research, 2009).

### *Illinois*

The first pre-K program in Illinois began in 1986, and in 1987 almost 7,000 children were served (Center for Early Education and Development at the University of Minnesota and the Federal Reserve Bank of Minneapolis, n.d.). By 2005, 657 school districts received funding, with an enrollment of 72,652 students. Preschool for All was signed into law in July of 2006 (Center for Early Education and Development at the University of Minnesota and the Federal Reserve Bank of Minneapolis, n.d.). "It is



estimated that when fully implemented, Preschool for All will ensure that 190,000 children will have access to high-quality preschool in Illinois” (Center for Early Education and Development at the University of Minnesota and the Federal Reserve Bank of Minneapolis, n.d., lines 14-15). In 2009, total state spending on pre-K was \$327,024,460.00 (National Institute for Early Education Research, 2009).

### *Indiana*

Indiana has no state-funded initiative (National Institute for Early Education Research, 2009).

### *Iowa*

Iowa’s Preschool Program was established in May of 2007 (Iowa Department of Education, 2011). “The Preschool Program along with other state and federally funded preschool programs and community partners in Iowa—such as Head Start, Early Childhood Special Education, Title I, and Shared Visions – make up Iowa’s comprehensive preschool” (Iowa Department of Education, 2011, p. 1). The Preschool Program will supply funding for 19,799 four-year-old children in the 2010-2011 school year (Iowa Department of Education, 2011).

### *Kansas*

In 1998, Kansas launched its At-Risk Four-Year-Old Children Preschool Program (National Institute for Early Education Research, 2009). “The program’s funding comes from at-risk dollars from the state general fund” (National Institute for Early Education Research, 2009, p. 62). In 2006-2007, funded by tobacco money, the Kansas Pre-K Pilot Program was established (National Institute for Early Education Research, 2009), “Half of the children enrolled in the program do not need to meet any risk factor eligibility criteria” (National Institute for Early Education Research, 2009, p.

62). According to the NIEER 2009 State Yearbook, 8,247 children were enrolled in the state programs, with spending slightly over \$3,000 per child (National Institute for Early Education Research, 2009).

### *Kentucky*

Kentucky's preschool education programs are available for all four-year-old children whose family income is no more than 150% of poverty; all three and four-year-old children with developmental delays and disabilities, regardless of income; and other four-year-old children as placements are available based on district decision. (Kentucky Department of Education, 2011, para. 1).

In 2009, total state spending was \$75,127,700 (National Institute for Early Education Research, 2009).

### *Louisiana*

Louisiana has three state-funded preschool programs: The Cecil J. Picard LA4 Early Childhood Program, the 8(g) Student Enhancement Block Grant Program, and the Nonpublic Schools Early Childhood Development Program (NSECD) (National Institute for Early Education Research, 2009). Established in 2001, the LA4 program is Louisiana's primary preschool program (Louisiana Department of Education, 2010b). LA4 funding allows 4-year-old children who are eligible to receive free or reduced lunch to enroll in preschool (Louisiana Department of Education, 2010b). "The 8(g) Student Enhancement Block Grant Program preschool program was established in 1993 to serve students who are at risk of not being prepared for kindergarten" (Louisiana Department of Education, 2010c, para. 2). The NSECD was established in 2001 to compensate parents who send their children to private preschools. The schools must be

state-approved, and eligibility is based on 200% of the federal poverty level (Louisiana Department of Education, 2010c).

### *Maine*

“Maine’s Two-Year Kindergarten initiative was created in 1983. The initiative aims to support public preschool education with resources allocated to local districts through the school funding formula (National Institute for Early Education Research, 2009).

In 2007 the Maine legislature approved a new definition and as per Title 20-A Education, programs for four year old children which are offered through a school administrative district are now defined as a ‘public preschool program.’ Upon approval by the Department of Education, these public preschool programs are eligible for pupil subsidy through the Essential Programs and Services formula. (Maine Department of Education, n.d., para. 3).

As of 2009, 24% of school districts offered the state-funded preschool program with a total enrollment of 2,731 students (National Institute for Early Education Research, 2009).

### *Maryland*

In 2002, the Bridge to Excellence of Public Schools Act was passed (Maryland State Department of Education, 2009). The Bridge to Excellence Act mandates that prekindergarten be offered to all 4-year-old children from families whose incomes are at 185% of the federal poverty guidelines and to those who are homeless (Maryland State Department of Education, 2009). In 2007, the Task Force on Universal Preschool Education recommended expanding the prekindergarten program to include all 4-year-olds (Maryland State Department of Education, 2009). A business plan was submitted

to the governor in 2009. Though elements of the business plan have been implemented, the recessive economy has stalled much of the plan.

In school year 2008-09, local school systems enrolled 25,821 prekindergarteners. About 60 percent of prekindergarteners are eligible under the mandate. The remaining 40 percent have been enrolled for educational needs. The expansion of *Preschool for All* to provide access to four-year-olds of families with household income at or below 300 percent of poverty guidelines would cost \$20 million. The expansion to all four-year olds who are expected to matriculate to public kindergarten would cost \$121 million. Seventy percent of the total costs would be borne by the State and 30 percent by local governments. (Maryland State Department of Education, 2009, p. 4)

#### *Massachusetts*

In 1985, Grant 391 was created to fund pre-K for typically developing 4-year-old children (National Institute for Early Education Research, 2009). The number of children funded with Grant 391 was to match the number of children being served in preschool inclusion programs (National Institute for Early Education Research, 2009). “In 2008-2009, state funding for Grant 391 was \$9 million” (National Institute for Early Education Research, 2009, p. 78).

In 2007, the state provided \$4.6 million to the Massachusetts Department of Early Education for a pilot UPK program (Massachusetts Department of Early Education and Care, 2009). With annual increases, current support for UPK totals \$10.9 million. Currently, Massachusetts has 279 UPK programs serving 6,600 preschool children (Massachusetts Department of Early Education and Care, 2009).

### *Michigan*

In 1985, Michigan established the Michigan School Readiness Program (MSRP) (National Institute for Early Education Research, 2009). The MSRP was designed to provide a pre-K foundation for at-risk children (National Institute for Early Education Research, 2009). Children considered at-risk had to come from economically disadvantaged families, as well as have at least one other risk factor (National Institute for Early Education Research, 2009). In 2008-2009, the program's name was changed to the Great Start Readiness Program, and program requirements changed (National Institute for Early Education Research, 2009). Currently, to become eligible to enter the pre-K program, one must come from a family with an income below 300% of the federal poverty level (National Institute for Early Education Research, 2009). Eighty-one percent of school districts offer a pre-K program, serving 24,091 children in 2009 (National Institute for Early Education Research, 2009).

### *Minnesota*

Minnesota offers the School Readiness Program in all 335 school districts (Minnesota Department of Education, 2011). The School Readiness Program is funded through state aid and comes in several different formats. Some districts offer half-day programs, while some districts offer classes with Head Start. In FY 2010, 34% of children enrolled came from families with incomes < \$30,000.00 annually. Approximately 9% of children enrolled came from families with incomes < \$10,000 annually. In 2010, 29% of 4-year-old children were served by the School Readiness Program, with state aid exceeding \$10 million (Minnesota Department of Education, 2011).

### *Mississippi*

Mississippi has no state-funded initiative (National Institute for Early Education Research, 2009).

### *Missouri*

“The Missouri Preschool Project (MPP) is implemented through a competitive grant program to public schools, Head Start programs, nonprofit agencies, and private child care providers” (Education Law Center, 2010, para. 2). Gaming revenues provide funding for the pre-K program, with additional monies coming from parental fees (Education Law Center, 2010). Parents are charged fees based on a sliding scale if their income exceeds 185% of the federal poverty level (Education Law Center, 2010). The MPP is available for all 4-year-olds; however, children from low-income families are given priority status (Education Law Center, 2010). In the 2008-2009 school year, the MPP only served 4% of 4-year-olds (Education Law Center, 2010).

### *Montana*

Montana has no state-funded initiative (National Institute for Early Education Research, 2009).

### *Nebraska*

The Nebraska Early Childhood Education (ECE) Grant Program provides state funding for preschool. “The purpose of the Nebraska ECE Grant Program is to provide high quality early childhood education experiences that assist children to reach their full potential and increase the likelihood of their later success in school” (Nebraska Department of Education, 2010, p. 1). More than 15 different sources provide funding for preschool, which expands the resources of the ECE Grant Program (Nebraska Department of Education, 2010). “ECE grants and state aid account for 24.6% of the

funding” (Nebraska Department of Education, 2010, p. 1). Local and federal monies also provide funds for early education, with federal aid accounting for the largest percentage of funding (Nebraska Department of Education, 2010). During the 2009-2010 school year, 3,042 children were served in preschool, using early education program grant funds (Nebraska Department of Education, 2010).

### *Nevada*

In 2001, Nevada allocated \$3.5 million to provide early childhood services to school districts across the state (Nevada Department of Education, 2009). The process for receiving monies is through a competitive grant. The State Department of Education is responsible for distributing the monies to school districts. Since 2001, the state has continued to offer funding, with Fiscal Year 2009 allotting \$3,338,875 for pre-K programs (Nevada Department of Education, 2009). There are no set criteria for a child to enroll in pre-K; however, only 53% of the districts offer a state-funded program (National Institute for Early Education Research, 2009). In 2009, 1,123 children were enrolled in a state-funded preschool program (National Institute for Early Education Research, 2009).

### *New Hampshire*

New Hampshire has no state-funded initiative (National Institute for Early Education Research, 2009).

### *New Jersey*

New Jersey has three preschool initiatives: the Abbott Preschool Program, Early Childhood Program Aid, and Early Launch to Learning (New Jersey Department of Education, 2008). Thirty-one school districts receive funding for pre-K through the Abbott Preschool Program, while 101 districts receive funding through the Early

Childhood Program Aid (New Jersey Department of Education, 2008). In 2004, when the Early Launch to Learning Program was established, 28 additional school districts received funding for pre-K (New Jersey Department of Education, 2008). “In the 2007-2008 school year, the approved projected budget for the Abbott preschool program totaled almost \$514 million with an average per-pupil allocation of \$12,297 for students served in school district and private provider-operated programs” (New Jersey Department of Education, 2008, p. 2). In 2007-2008, the Early Childhood Program Aid provided approximately \$37,500.000 serving 7,500 preschool children (New Jersey Department of Education, 2008). In its fourth year, the Early Launch to Learning Initiative allowed 1,500 children to have a preschool education (New Jersey Department of Education, 2008).

#### *New Mexico*

The New Mexico Pre-K initiative was adopted in the 2005-2006 school year initiative (National Institute for Early Education Research, 2009). Though there are no specific requirements for attending the pre-K program, two-thirds of the students enrolled must live in the area of a Title I school initiative (National Institute for Early Education Research, 2009). In 2009, the New Mexico initiative served 4,745 students in pre-K at a total cost of approximately \$15 million initiative (National Institute for Early Education Research, 2009).

#### *New York*

In 1998, New York instituted UPK for all 4-year-olds initiative (National Institute for Early Education Research, 2009). However, funding has never been sufficient to allow every 4-year-old to enroll. Children are chosen to participate in pre-K based on a lottery system initiative (National Institute for Early Education Research,



2009). In the 2008-2009 program year, approximately 43% of the state's 4-year-olds were served through the UPK program, for a total spending in excess of \$375 million initiative (National Institute for Early Education Research, 2009). Sixty-seven percent of the state's school districts offer a pre-K program initiative (National Institute for Early Education Research, 2009).

#### *North Carolina*

In the 2001-2002 school year, North Carolina established the More at Four Pre-Kindergarten Program (Peisner-Feinberg, 2010). More at Four is a state-funded program that targets at-risk 4-year-olds (Peisner-Feinberg, 2010). Four-year old children must come from families with an income of up to 300% of federal poverty rates (Peisner-Feinberg, 2010). All 100 counties in North Carolina participate in the More at Four program. According to a report by Peisner-Feinberg and Schaaf, "More at Four has served over 160,000 children during the first nine program years (2002-2010)" (Peisner-Feinberg, 2010, p. 4).

#### *North Dakota*

North Dakota has no state-funded initiative (National Institute for Early Education Research, 2009).

#### *Ohio*

Ohio has two pre-K initiatives: the Early Childhood Education (ECE) program and the Early Learning Initiative (ELI) (National Institute for Early Education Research, 2009). The ECE program was established in 1990, serving children from families of income levels up to 200% of the federal poverty level (National Institute for Early Education Research, 2009). In 2005, the ELI initiative was established with funds from Temporary Assistance for Needy Families (National Institute for Early Education

Research, 2009). “ELI directly funds Head Start programs, private and faith-based child care centers, and public schools” (National Institute for Early Education Research, 2009, p. 110). In 2009, the ECE and ELI programs had a state enrollment of 21,963 children, with total state spending exceeding \$150 million (National Institute for Early Education Research, 2009).

### *Oklahoma*

Oklahoma established its first pre-K program in 1980, with children being enrolled on a first-come, first-served basis (Illgen, n.d.). In the first year, only 10 districts participated in the program. In 1990, Oklahoma funded pre-K for all 4-year-olds eligible for Head Start. In 1998, pre-K became a state-funded program for all 4-years in the state (Illgen, n.d.). Since 1998, pre-K enrollment in Oklahoma has doubled. “Oklahoma has ranked first in the nation every year for serving the highest percentage of 4-year-olds in state-funded preschool” (National Institute for Early Education Research, 2009, p. 114).

### *Oregon*

In 1987, Oregon established the Oregon Head Start Prekindergarten program (National Institute for Early Education Research, 2009). Federal and state governments continue to work together to provide pre-K for children from low-income families. During the 2008-2009 school year, monetary expansion allowed an additional 1,374 children to enroll in the pre-K program (National Institute for Early Education Research, 2009). As of 2009, all counties in the state participated in the pre-K program, with a total program enrollment of 6,472 students. Based on the 2009 NIEER State Preschool Yearbook, Oregon spent in excess of \$51 million on pre-K resources (National Institute for Early Education Research, 2009).

### *Pennsylvania*

“Since 2002, Pennsylvania has moved from one of nine states to offer no publicly-funded pre-kindergarten to one of the nation’s leaders in early education” (Pennsylvania Departments of Education and Public Welfare , 2010, p. 2).

Pennsylvania currently has several different methods of funding pre-K programs, such as the Pennsylvania Educational Accountability Block Grant, Pennsylvania Kindergarten for Four-Year-Olds and School Based Pre-K, Pennsylvania Head Start Supplemental Assistance Program, and Pennsylvania Pre-K Counts (National Institute for Early Education Research, 2009). Total state enrollment for the 2008-2009 school year was 31,509 students, with total state spending exceeding \$179 million (National Institute for Early Education Research, 2009).

### *Rhode Island*

Rhode Island has no state-funded initiative (National Institute for Early Education Research, 2009).

### *South Carolina*

The South Carolina Education Improvement Act (SCEIA) was South Carolina’s first pre-K program (National Institute for Early Education Research, 2009).

Established in 1984, the SCEIA was established to improve school readiness and began as a half-day program (National Institute for Early Education Research, 2009). In 2006, the Child Development Education Pilot Program (CDEPP) was established to provide full-day pre-K services to children living in specific counties or children who were eligible to receive free or reduced lunch (National Institute for Early Education Research, 2009). Total state spending for pre-K was in excess of \$40 million in 2009

and served approximately 24,866 children (National Institute for Early Education Research, 2009).

#### *South Dakota*

South Dakota has no state-funded initiative (National Institute for Early Education Research, 2009).

#### *Tennessee*

In 2005, Tennessee passed the Voluntary Pre-K for Tennessee Act (Tennessee Department of Education, n.d.). Since the 2005-2006 school year, Tennessee has funded an additional \$213 million dollars for pre-K (Tennessee Department of Education, n.d.). In FY 2009, Tennessee's total funding for pre-K was \$83 million, with \$25 million of the \$83 million coming from lottery revenues (Tennessee Department of Education, n.d.). This money allowed approximately 18,000 children to receive a pre-K education through Tennessee's state-funded programs (Tennessee Department of Education, n.d.).

#### *Texas*

Based on 2009 demographics, approximately 379,774 four-year-olds lived in the state of Texas (Texas Education Agency, 2011). "Public prekindergarten serves approximately 28% of the total population and 90% of eligible students (as estimated based on numbers of kindergarten students who are LEP and economically disadvantaged" (Texas Education Agency, 2011, lines 3-4). In the 2010-2011 school year, 224,335 students enrolled in Texas prekindergarten classes (Texas Education Agency, 2011). In 2009, state spending on pre-K exceeded \$760 million (National Institute for Early Education Research, 2009).

### *Utah*

Utah has no state-funded initiative (National Institute for Early Education Research, 2009).

### *Vermont*

In 1987, the Vermont Early Education Initiative was established (National Institute for Early Education Research, 2009). “Children are eligible for the program if they come from families with incomes below 185% of the federal poverty level or if they display other risk factors such as developmental delay, history of abuse or neglect, limited English proficiency, or social isolation” (National Institute for Early Education Research, 2009, p. 138). In 2007, Act 62 increased access to pre-K by providing additional funding (Vermont Department of Education, 2011). Act 62 allows districts to offer up to 10 hours per week of pre-K services; the district may combine state and local monies to expand pre-K programs (National Institute for Early Education Research, 2009). In 2009, total state spending for pre-K exceeded \$16 million and had a program enrollment of 4,658 children (National Institute for Early Education Research, 2009).

### *Virginia*

In 1995, the Virginia Preschool Initiative (VPI) was established (Virginia Department of Education, n.d.). “As of 2005-2006, state funds are available to provide comprehensive preschool programs to 100 percent of Virginia’s at-risk four-year-olds, as defined by VPI funding eligibility, and who are not being served by Head Start” (Virginia Department of Education, n.d., para. 2). In 2009, approximately 14,585 students were enrolled in pre-K, with total state spending exceeding \$58 million (National Institute for Early Education Research, 2009).

### *Washington*

The Washington Early Childhood Education and Assistance Program (ECEAP) was established in 1985 (National Institute for Early Education Research, 2009). The ECEAP is responsible for preschool programs that will enable children to be ready for entry into kindergarten. “The program primarily serves 4-year-olds from families at or below 110 percent of the federal poverty level, but 3-year-olds may also enroll based on other risk factors” (National Institute for Early Education Research, 2009, p. 144). “In the 2008-2009 school year, more than 8,100 children and their families across 37 counties participated in the ECEAP initiative” (National Institute for Early Education Research, 2009, p. 144).

### *West Virginia*

In 2002, West Virginia legislature passed a bill requiring the West Virginia Board of Education to provide access to a pre-K education for all 4-year-olds by the year 2012-2013 (West Virginia Department of Education, n.d.). “During 2010-11, 70% of the classrooms are in collaboration with community partners” (West Virginia Department of Education, n.d. slide 2). Pre-K enrollment for the 2010-2011 year was 14,606 children (West Virginia Department of Education, n.d.). For all 4-year-olds to have access to pre-K by 2012, the state anticipates an additional 20% enrollment (West Virginia Department of Education, n.d.). “As enrollment increases, funding to implement increases – FY2010 Total State Spending for Pre-K was over 75 million dollars (in addition to Federal Head Start and Child Care funding)” (West Virginia Department of Education, n.d., slide 2).

### *Wisconsin*

In 1856, Wisconsin opened the first 4-year-old kindergarten in the United States (Wisconsin Council on Children and Families, 2010). By the 1920s, 4-year-old kindergartens started to decline. “For a significant part of the twentieth century, the predominant view across the nation was that the best place for most children below school age was with their mothers in their homes” (Wisconsin Council on Children and Families, 2010, p. 6). In 1984, state funding for 4-year-olds was reinstated (Wisconsin Council on Children and Families, 2010). In 1984, school districts that offered UPK shared the cost with the state (Wisconsin Council on Children and Families, 2010). The 1990s brought rapid growth to pre-K in Wisconsin. “As of the 2009-2010 school year, 80 percent of districts were offering 4K, serving 38,000 students, 53 percent of the 4-year-olds in the state” (Wisconsin Council on Children and Families, 2010, p. 7).

### *Wyoming*

Wyoming has no state-funded initiative (National Institute for Early Education Research, 2009).

### Pre-K and Student Achievement: The Fiscal Relationship

In a recession-ridden economy, it is highly unlikely for lawmakers to increase funding for pre-K initiatives. Though the vast amount of literature detailing the positive relationship between a pre-K quality education and student-achievement may be convincing, lawmakers are forced to evaluate the dollars and cents behind UPK initiatives. This section will review past research as it relates to the economic benefits that are a result of pre-K enrollment.

### *Perry Preschool Experiment*

David Weikart was the director of the school district's special education program in Ypsilanti, Michigan, when he began thinking about opening a preschool for poor children (Kirp, 2007). "I was working in a context where most people felt that IQ was God-given and, unfortunately, low-IQ people were just born that way,' Weikart writes in his memoir" (Kirp, 2007, p. 51). Experts felt that an intellectually rigorous regime could actually harm poor children. Despite the negative opinions of the psychologists with whom Weikart conferred, he persevered and received funding to launch a preschool experiment in the South Side area of Ypsilanti (Kirp, 2007).

In 1961, the Perry Preschool Project (PPP) was launched (Kirp, 2007). Thirteen black 3- and 4-year-olds were the first to take part in the PPP (Kirp, 2007). "They came from poor families, and their South Side neighborhood, with its rundown public housing and high crime rate, was a dangerous place to grow up" (Kirp, 2007, p. 50). Prior to the debut of the PPP, not one class at Perry Elementary had scored above the 10<sup>th</sup> percentile on national achievement tests (Kirp, 2007). In the affluent primary school across town from Perry Elementary, no class had ever scored below the 90<sup>th</sup> percentile on national achievement tests (Kirp, 2007).

Most of those who enrolled at Perry Preschool were there for two years, three hours a day, five days a week. The curriculum emphasized problem solving rather than unstructured play or 'repeat after me' drills. The children were viewed as active learners, not sponges; the pedagogy called for them to carry out and review what they were learning. The teachers, one for every five or six youngsters, were well trained—most had a master's degree in child development—and were paid public school salaries. (Kirp, 2007, p. 52)



The teachers at Perry Preschool made weekly home visits and encouraged parents to read to their children and to use every day experiences as teachable moments. Blanche Marshall, whose daughter went to Perry Preschool in 1962, remembers being told, “If you read the newspaper, put your child on your lap, read out loud, and ask her, ‘What did I just read?’ When you take her to the grocery store, have her count the change” (Kirp, 2007, p. 204).

From the inception of the PPP, Weikart intended to follow the students through their elementary years and track their academic progress. Weikart’s results were not what he had hoped. By fourth-grade, students’ achievement scores were higher; however, their IQ scores were no higher than the control groups (Kirp, 2007).

Weikart did not give up. He received a grant from the Carnegie Corporation to open a research center, the High/Scope Foundation, where the study could be continued. Researchers collected data on the students every year from the time the children were seven years old until they were eleven, then at ages fourteen, fifteen, nineteen, twenty-seven, and forty—an astonishingly long time in the annals of education research. (Kirp, 2007, pp. 52-53)

High/Scope was able to keep track of 97% of people involved with the PPP (Kirp, 2007).

The Perry study is not only noteworthy for longevity. It also asks the truly important question: What is the impact of preschool, not on the IQ scores of seven-year-olds but on their lives, outside as well as inside the schoolhouse? The answer is that a superb preschool experience can make a lifelong difference. (Kirp, 2007, p. 53)

Though the PPP cost-benefit analysis can account for tangible outcomes, it would be nearly impossible for one to know the real impact that PPP had on the lives of the children involved. Since the children came from poor families usually living in public housing, did going to Perry Preschool give them a safe and comfortable environment to spend a few hours each day? While the answer is a resounding, “Yes!” the benefits were vastly greater. Perry Preschool set the stage for many of these children to become successful, productive members of today’s society. From a financial perspective, has the PPP been a successful venture?

In 1996, when the Perry Preschool participants were twenty-seven, the second installment of Barnett’s cost-benefit analysis, *Lives in the Balance*, appeared. At that point, they were making significantly more money, and were more likely to own a home and a second car, than those who had missed out on the opportunity to go to preschool. They were also significantly less likely to have spent time in prison. The return for every dollar that had been spent on preschool, Barnett calculated, was \$7.16. That figure was unmatched by any other social program, and the widely reported finding brought the Perry research into the mainstream of economics. Eight years later, when the most recent installment of this remarkably long-running study was published, the Perry participants were in their forties. The cost-benefit ratio had risen to an astronomical seventeen to one, and the annual return on the preschool investment exceeded 11 percent. Perry Preschool had outperformed the stock market by nearly two to one. (Kirp, 2007, pp. 81-82)

According to Kirp (2007), the most recent study of Perry Preschool participants indicated that nearly twice as many had earned college degrees as individuals from the

control group. Seventy-six percent of Perry participants had jobs, as compared to 62% of the control group. The participants were more likely to own their homes and less likely to have been on welfare than the control group. The control group earned an average of \$15,300 a year; whereas, Perry Preschool participants earned \$20,800 a year (Kirp, 2007).

Barnett (2006) published the following statistics assimilated when the PPP participants were 27 years old: (a) 41% were never on welfare as adults, compared to 20% of the control group; (b) 36% owned a home, as compared to 13% of the control group; and (c) 29% earned in excess of \$2,000 monthly, as compared to 7% of the control group (Barnett, 2006). When the PPP participants were 40 years old, 76% had savings accounts, as compared to 50% of the control group; 76% were employed, as compared to 62% of the control group; and 60% earned \$20,000 annually, whereas only 40% of the control group had the same annual earnings (Barnett, 2006).

Belfield, Nores, Barnett, and Schweinhart (2006) conducted a study on the costs and benefits of the PPP. In describing how the cost-benefit analyses were derived, Belfield et al. stated the following:

Program costs are compared against treatment impacts on educational resources, earnings, criminal activity, and welfare receipt. Net present values are calculated for participants, the general public, and society. The treatment group obtains significantly higher earnings. For the general public, higher tax revenues, lower criminal justice system expenditures, and lower welfare payments easily outweigh programs costs; they repay \$12.90 for every \$1 invested. However, program gains come mainly from reduced crime by males. (Belfield et al., 2006, p. 162)

Belfield et al. (2006) estimated males who had participated in the PPP earned approximately \$317,822 between the ages of 28 and 40 years as compared to earnings of \$240,405 for males in the control group. Females between the ages of 28 and 40 years earned approximately \$240,405 as compared to \$183,170 for females in the control group. Lifetime tax contributions were estimated at \$314,740 for males who participated in the PPP and \$234,949 for females. The control group had estimated lifetime tax contributions of \$282,817 for males and \$193,456 for females (Belfield et al., 2006).

Belfield et al. (2006) detailed the costs of crime for the PPP participants from the ages of 28 to 40 as compared to those not participating in the PPP. The estimates were derived by computing probation costs, incarceration costs, victim costs, cost of policing, arrest and sentencing, and criminal justice system costs (Belfield et al., 2006). From the ages of 28 to 40, the total costs affiliated with crime for males who had attended Perry Preschool were \$484,623 (Belfield et al., 2006). Though substantial, the costs were considerably less than the \$773,265 spent on males who had not attended Perry Preschool (Belfield et al., 2006). The difference in total costs affiliated with crimes for females who had attended Perry Preschool versus females who had not attended Perry was much less substantial, totaling approximately \$8,000 (Belfield et al., 2006).

According to Belfield et al., the Perry Preschool Project has produced solid monetary benefits to society.

The K-12 education savings (lower grade retention and special education placement) outweigh the educational subsidies for further education attainment, meaning that pressure on educational budgets is lessened overall. Each age-

period shows higher tax payments and lower welfare payments by the program group. However, the most important impact is the reduction in crime costs. Using a 3 percent discount rate, the program costs \$15,166, the benefits are \$195,261 per participant, and the net benefits are therefore \$180,455. At this discount rate the program repays \$12.90 for every \$1 invested. (Belfield et al., 2006, p. 179)

### *The Abecedarian Program*

The Abecedarian program was a preschool program that served low-income children in Chapel Hill, North Carolina (American Youth Policy Forum, n.d.). Unlike the PPP, Abecedarian enrolled children from infancy through 5 years of age (American Youth Policy Forum, n.d.). In 1972, a random group of 111 infants were selected to participate in the Abecedarian Program (American Youth Policy Forum, n.d.). Fifty-seven infants were randomly selected to participate in the Abecedarian project, while 54 were assigned to the control group (American Youth Policy Forum, n.d.). Ninety-eight percent of the children selected for the Abecedarian project were African American (American Youth Policy Forum, n.d.). Participants were selected based on family income and maternal education level. Ethnicity was not a factor in selection of participants. The children in the Abecedarian project attended 5 days a week for 8 hours each day. The program was year-round and served children until they were 5 years old. “A specially designed Abecedarian infant curriculum covered cognitive and fine motor development, social and self-help skills, language and gross motor skills” (American Youth Policy Forum, n.d., p. 46). When children became toddlers, the curriculum changed accordingly. “The curriculum included interest centers for art, housekeeping, blocks, fine-motor manipulatives, language and literacy. A special

emphasis on language acquisition required daily or semi-weekly individual sessions with each child” (American Youth Policy Forum, n.d., p. 47). Before children who participated in the Abecedarian project enrolled in kindergarten, they attended a 6-week summer program that included other children from the community. The summer program was designed to facilitate a smooth transition from the Abecedarian program to kindergarten in a public school setting.

The Abecedarian program tracked students until they were 21 years of age. Out of the 111 children enrolled in the Abecedarian project at its inception, 104 remained in the study (Barnett & Masse, 2007). A benefit-cost analysis of the Abecedarian program reports estimates of the value of program costs and benefits in 2002 dollars, discounted at real rates of 3% (Barnett & Masse, 2007).

Benefits were estimated in seven categories: (1) earnings and fringe benefits of participants; (2) earnings and fringe benefits of future generations; (3) maternal earnings; (4) elementary and secondary education cost-savings; (5) improved health; (6) higher education costs; and (7) welfare use. (Barnett & Masse, 2007, p. 117)

The *Economics of Education Review* reports that the estimated cost for enrollment of 5 years in the Abecedarian program is \$67,000 per child (Barnett & Masse, 2007). In the study by Barnett and Masse (2007), it was estimated that lifetime earnings for participants beyond age 21 years is approximately \$37,500 (Barnett & Masse, 2007). The earnings of future generations were estimated at being \$5,700 more for Abecedarian participants than for the control group (Barnett & Masse, 2007). The study stated that, “This analysis relies only on the program effect on income and evidence of a positive relationship between parental income and the income of children”

(Barnett & Masse, 2007, p. 117). The total K-12 education cost for Abecedarian participants was approximately \$8,836 (Barnett & Masse, 2007).

School histories were constructed for 99 of the study participants based on official school record data. For each participant for each year, a school placement was assigned. The major distinction was between special education placements and regular educational placements, with the former being more resource intensive and, hence, more costly. (Barnett & Masse, 2007, p. 117)

Smoking and health benefits were based on decreased income due to smoking related early demise. The benefits to Abecedarian participants were estimated at \$17,800. Based on Barnett and Masse's study, participants had higher level of educational achievement at age 21. Accounting for the cost of attending institutions of higher learning, the participants actually had to deduct \$8,128 from their total lifetime benefit-cost figures. While Abecedarian participants relied less on welfare payments than the control group, benefits were estimated at only \$196 per participant. Barnett and Masse stated that,

A reduction in welfare payments to program participants represents a transfer of money to the general taxpayer and does not change total social benefits associated with the program. Thus, the benefits to society as a whole are limited to the reduction in costs associated with administering the program. (Barnett & Masse, 2007, p. 119)

The cost-benefit analysis for Abecedarian participants yielded program costs of \$63,476 per participant. The benefits totaled \$158,278 (Barnett & Masse, 2007).

### *Chicago Child-Parent Center*

The Chicago-Child Parent Center (CPC) was established in 1967 with funding from Title I of the Elementary and Secondary Education Act (Department of Early Childhood Education, Chicago Public Schools [DECE], 2011). The DECE initiative is the second oldest federally funded preschool program in the United States (DECE, 2011). The goal of the first CPC was to improve student attendance and achievement in a high-poverty area of Chicago. Children attended the CPC Program 5 days a week, 3 hours a day for two years prior to entering kindergarten (“Chicago Child-Parent Center study celebrates coming of age,” 2007). Family services were provided, which included parent education. “Currently, the CPC Program operates in 24 centers throughout the Chicago Public Schools” (DECE, 2011, para. 3). Children are eligible for the program if they are 3 or 4 years of age and live in an area serviced by Title I (DECE, 2011). Enrollment is based on those most-in-need and whose parents agree to participate on a regular basis. CPC curriculum “include topics relating to child growth and development, literacy, readiness skills, parenting skills, health, safety, and nutrition” (DECE, 2011, para. 3).

In a study conducted by Temple and Reynolds, “Depending on the assumptions made, our results indicate that the benefit-cost ratio for the preschool program offered by the Child-Parent Centers ranges from \$5.98-\$10.15” (Temple & Reynolds, 2007, p. 126). Temple and Reynolds used data from the Chicago Longitudinal Study, which evaluated participants enrolled in CPC programs during 1985-1986 (Temple & Reynolds, 2007). The research indicated the following:

Children who participated as of age 3 or 4 are less likely to require school remediation services such as special education placement and grade retention;



and they are more likely to complete high school and are less likely to commit crimes as juveniles and young adults. (Temple & Reynolds, 2007, p. 127)

The CPC, Abecedarian, and PPP are high-profile preschool initiatives, which have undergone numerous studies. The CPC is the only program that was established in the public school system and is still in existence (Temple & Reynolds, 2007). Temple and Reynolds reported that high-school graduates would earn approximately \$202,176.00 more than high-school dropouts by age 65 (Temple & Reynolds, 2007). Income affects society. The more one earns, the more one can return to society. In addition, the higher the potential earnings, the less one must rely on government subsidies. Reynolds, Temple, Robertson, and Mann (2002) concluded that “The preschool program provided a return to society of \$7.14 per dollar invested by increasing economic well-being and tax revenues, and by reducing public expenditures for remedial education, criminal justice treatment, and crime victims” (Reynolds et al., 2002, para. 1).

When evaluating cost-benefit analyses from various sources, one may observe slight variances in bottom-line benefit amounts. Though the amounts may vary, the results are the same—high-quality preschool education programs consistently produce a formidable return to society. According to the Texas Early Childhood Education Coalition (2008), the Perry Preschool project returned \$8.74 for every \$1 invested; the Abecedarian program returned \$3.74 for every \$1 invested; and the Chicago Child-Parent Center Program returned \$7.14 for every \$1 invested (Texas Early Childhood Coalition, 2008).

## Pre-K and Student Achievement: The Academic Relationship

### *Pre-K Enrollment and Standardized Test Scores*

Based on standardized test scores, is there a relationship between pre-K attendance and student achievement? Frede (2011) stated the following:

Institutionalized preschool education is found to increase school-appropriate behavior and cognitive abilities, both of which contribute to increased test scores. Studies also find that as preschool participation rates move toward universal coverage, average tests scores rise and within country inequality in eighth-grade math and science test scores falls. (para. 4)

The 2009 results of the Program for International Student Assessment (PISA) indicated that the United States was in the middle of the group of 65 countries for educational achievement in reading, math, and science, while Shanghai was at the top (Frede, 2011). Shanghai has UPK and pre-K teachers are required to have at least a bachelor's degree (Frede, 2011).

Fitzpatrick (2008) examined the relationship between UPK and academic achievement. The study used, "individual-level data from the National Assessment of Education Progress (NAEP) to estimate the effects of the availability of Universal Pre-K for four year olds on test scores and progression through school as of the fourth grade" (Fitzpatrick, 2008, p. 2). Since Georgia was the first state to offer UPK, it was chosen for the study.

Fourth graders in Georgia in the 2002-2003 school-year were the first group tested in math who had been eligible for Universal Pre-K; the first eligible group tested in reading was in fourth grade in Georgia in the 2001-2002 school year. (Fitzpatrick, 2008, p. 8)

Fitzpatrick (2008) disaggregated and examined achievement levels according to ethnicity and eligibility for the National School Lunch Program (NSLP). Results of the study indicated the following:

The math scores of Caucasian children ineligible for NSLP increased by 3.6 percent of a standard deviation. Similarly, the math scores of NSLP-eligible Caucasian children increased by 8.2 percentage points. However, the estimates of the program's introduction on the math scores of African-American children and on the reading scores of any of these groups are not statistically different from zero. (Fitzpatrick, 2008, p. 26)

Fitzpatrick took the study a step farther and delved into the relationship between UPK, residential area of children in the study, and student achievement. Results indicated that Caucasian children in rural and urban fringe areas gained the most from UPK (Fitzpatrick, 2008).

The math scores of these children increase by 6 to 9 percent of a standard deviation. Their reading scores increase by 3 to 7 percent of a standard deviation and they are at least 2 percentage points more likely to be on-grade for their age. (Fitzpatrick, 2008, p. 27)

Fitzpatrick's study indicated that "African-American disadvantaged students in rural areas score 12 percent of a standard deviation higher on reading tests in fourth grade because of the programs' availability" (p. 29). Children living in urban areas, who had attended a pre-K program, had academic achievement greater than children who did not attend pre-K (Fitzpatrick, 2008).

Reynolds et al. (2002) conducted a study outlining the benefits of the Child-Parent Center Program. Funding for the study was provided by the National Institute of

Child Health and Human Development and the Office of Educational Research and Improvement. Table 1 indicates the results of the study, with adjusted mean being used to compare outcomes (Reynolds et al., 2002).

Table 1

*Results of Child-Parent Center on Academic Achievement*

Domain and Measure	<i>n</i>	Group	
		Preschool	Comparison
Age 5 ITBS cognitive development	1,102	49.6	43.3
Age 6 ITBS word analysis	1,531	66.0	59.8
Age 9 ITBS reading achievement	1,285	98.2	93.5
Age 14 ITBS reading achievement	1,158	147.1	141.6
Age 14/15 consumer skills, % passing	1,158	62.5	52.3

The National Institute for Early Education Research (NIEER) published results, which concur with the study by Reynolds et al. (2002). “The CPC study has a relatively large sample and has maintained its sample integrity into adulthood; it estimates program effects on a broad range of outcomes through age 21” (Barnett, 2008, p. 12). According to the NIEER, children who attended the CPC have increased test scores through at least middle school (Barnett, 2008).

Barnett (2007) reported that children at the ages of 14 and 15 who attended the Abecedarian Program had a mean reading achievement score of 94, as compared to 88 for the control group. The same group had a mean math achievement score of 93

(Abecedarian participants) and 88 (control group) (Barnett & Masse, 2007). Lawrence Schweinhart, president of High/Scope Educational Research Foundation, reported that findings for the Perry Preschool Program were similar to those of CPC and Abecedarian programs (Schweinhart, 2005). Referring to outcomes of the Perry Preschool Program, Schweinhart stated the following:

The program group also significantly outperformed the no-program group on various intellectual and language tests from their preschool years up to age 7; on school achievement tests at ages 9,10, and 14; and on literacy tests at ages 19 and 27. (Schweinhart, 2005, p. 1)

Statistical data from the Chicago Child-Parent Center, the Abecedarian program, and the Perry Preschool program offer evidence needed for states to move forward with funding for UPK. Published data from states offering pre-K show a positive correlation between pre-K and student achievement. A longitudinal study of the Michigan School Readiness Program (MSRP) indicated fourth graders who had attended the MSRP passed the state literacy test at a 24% higher rate and passed the state math test at a 16% higher rate (Wat, 2010). Second graders who had attended the Abbott Preschool Program did significantly better in math, comprehension, and vocabulary skills (Wat, 2010). Whitley County in Kentucky credits pre-K with moving the district from one of the worst in the state to where it is today: “Today, Whitley is among the top 10 percent of districts on the Kentucky Core Content Test and has lowered its dropout rate from nearly 7 percent to less than 1 percent” (Buenafe, 2011, p. 3). The Pew Center on the States offered the following synopsis of the Pittsburgh Public School System:

In 2006, with the Pittsburgh Public Schools (PPS) failing to meet academic performance targets set out under federal and state laws, then-Superintendent

Mark Roosevelt released the Excellence for All reform agenda. This roadmap for improving student achievement included expanding access to high-quality pre-K. Since then, the percentage of students proficient in reading by the end of third grade has risen from 49 percent to 62 percent. In 2009, the district made adequate yearly progress for the first time in its history. (Buenafe, 2011, p. 3)

In 2007, the Tennessee Department of Education contracted Strategic Research Group to conduct a study to determine short- and long-term effects of its state-funded pre-K program (Strategic Research Group, 2011). The results of the study indicated that pre-K participation had “reliable effects on student outcomes in Kindergarten and First Grade in 2008-2009, primarily among economically disadvantaged students” (Strategic Research Group, 2011, p. 11). However, no significant advantage on assessment scores was discovered in students in Grades 3-5 (Strategic Research Group, 2011).

As the above studies indicate, a positive relationship exists between pre-K enrollment and student achievement as evidenced by an increase in test scores. Short-term benefits seem to be greatest as do benefits for children from low-income families. The next section of this study will focus on the relationship of pre-K enrollment and student achievement based on gender.

#### *Pre-K Enrollment, Student Achievement and Gender*

Is there a relationship between gender, pre-K attendance, and student achievement? Anderson (n.d.) conducted a study reevaluating the Abecedarian, Perry Preschool, and Early Training projects. Similar to the Abecedarian and Perry Projects, the Early Training Project (ETP) targeted 4- and 5-year-old children from low-income families (Child Trends Research Agency, 2007). The study was conducted in the 1960s

and involved a part-day summer preschool program and weekly meetings (Child Trends Research Agency, 2007). According to Anderson (n.d.) “the primary finding of the reanalysis is that girls garnered substantial short- and long-term benefits from the interventions. However, there were no significant long-term benefits for boys” (Anderson, n.d., p. 1).

Maldonado (2008) conducted a study examining how males versus females scored on the Texas Assessment of Knowledge and Skills (TAKS). TAKS English language arts and math scores from 2006-2007 were analyzed. Maldonado focused on 720 third-grade students who took the Reading TAKS and 717 third-grade students who took the Math TAKS (2008). Based on gender, results indicated that no statistical significant difference was found among the students who attended pre-K and the students who did not attend pre-K (Maldonado, 2008).

Belfield et al. (2006) conducted a study to analyze data from the Perry Preschool Program. Though the data were not disaggregated based on state standardized test scores, academic achievement was measured in terms of educational attainment. At the age of 27 years, 32 males and 20 females did not graduate from high school, 68 males and 72 females graduated from high school, and 0 males and 4 females earned a college degree (Belfield et al., 2006). Similar results were ascertained from the Abecedarian program. Females who had been in the Abecedarian program earned 1.2 years more education than women in the control group; however, there was no statistical significant difference for males (American Youth Policy Forum, n.d.).

Based on prior reviews, girls who attended pre-K achieved greater academic success than boys who attended pre-K. A multitude of studies were examined by this researcher. Though a plethora of information is available, one may find information on

the effects pre-K has on gender lacking. The data for this study will use gender as a variable.

*Pre-K Enrollment, Student Achievement, and Socioeconomic Status*

Is there a relationship between the socioeconomic status of students who attended pre-K and student achievement? As discussed in previous sections, the Abecedarian, Child-Parent Center, and Perry Preschool programs offer statistically significant data indicating a positive relationship between pre-K attendance and student achievement. Since all three programs targeted children from low-income families, one can surmise that there is a positive relationship between pre-K enrollment, student achievement, and children from low socioeconomic backgrounds. Magnuson, Ruhm, and Waldfogel (2007) used data collected from the Early Childhood Longitudinal Study–Kindergarten to address the impact of pre-K on disadvantaged children. Magnuson et al. defined *disadvantaged* as children in poverty, children whose mother or father did not complete high school, and children whose families received welfare during the fall or spring of kindergarten (Magnuson et al., 2007). Results of the study indicated that the average disadvantaged child scored at the 33<sup>rd</sup> percentile in reading, while the disadvantaged child who attended pre-K scored at the 44<sup>th</sup> percentile (Magnuson et al., 2007). Magnuson et al. stated the following:

Our main conclusion is that prekindergarten has few lasting positive effects on advantaged children's skills by first grade and persisting adverse effects on aggression and self-control, but yields larger benefits for disadvantaged children. Among children attending prekindergarten in the same public school as kindergarten, English language arts and math achievement is increased without an apparent rise in misbehavior. These results suggest that the greatest potential



return to public investments in early education may be obtained by increasing disadvantaged children's enrollment in prekindergarten and by expanding programs located in local public schools. (Magnuson et al., 2007, p. 49)

Gormley, Gayer, Phillips, and Dawson (2005) conducted a study of pre-K and kindergarten students who were enrolled in Tulsa, Oklahoma, public schools (Gormley et al., 2005). In an effort to determine if pre-K enrollment had a statistically significant impact on disadvantaged students, three subtests of the Woodcock-Johnson Achievement Test were administered (Gormley et al., 2005). "The Woodcock-Johnson Achievement Test is a nationally normed test that has been widely used in studies of early education and of its consequences, including studies with racially and socioeconomically mixed samples" (Gormley et al., 2005, p. 875). Letter-Word Identification, Spelling, and Applied Problems were the subtests used by Gormley et al. Children were tested the first week of school. The treatment group consisted of kindergarten children who had completed pre-K the previous year, while the control group consisted of children who had just entered pre-K. To determine if there is a positive relationship between pre-K and the socioeconomic levels of children, test results were disaggregated into three categories: full-price lunch, reduced-price lunch, and free-lunch. Results indicated the pre-K program had the largest effects on the Letter-Word Identification subtest, followed by the Spelling subtest, with the Applied Problems subtest being last. The pre-K program was also found to benefit children from diverse income brackets, including children eligible for a full-price lunch, a reduced-price lunch, and no lunch subsidy at all" (Gormley et al., 2005, p. 881).

In 2008-2009, Tennessee served approximately 18,000 disadvantaged students in 934 pre-K classrooms (Strategic Research Group, 2011). A Vanderbilt University

study compared the performance of students enrolled in a public Tennessee pre-K program to students who were not admitted to pre-K due to space limitations (Locker, 2011). Results of the study indicated the following:

Assessments at the beginning and end of the pre-K year found that pre-K children had a 98 percent greater gain in literacy skills than those who didn't attend, a 145 percent greater gain in vocabulary, and a 109 percent greater gain in comprehension. They also made strong but more moderate gains in early math skills (33 percent to 63 percent greater gains). The average gain across the board was 82 percent. (Locker, 2011, para. 2)

According to Vanderbilt professor, Mark Lipsey (cited in Locker, 2011), the goal of Tennessee pre-K is to improve the readiness skills of economically disadvantaged children so they will enter kindergarten with better math and literacy skills. The results of the Vanderbilt study support Tennessee's pre-K goal (Locker, 2011).

Barnett (2008) reviewed existing research to determine the long- and short-term effects of pre-K on young children's learning. Barnett's study concluded that, "The strongest evidence suggests that economically disadvantaged children reap long-term benefits from preschool. However, children from all other socioeconomic backgrounds have been found to benefit as well" (Barnett, 2008, p. 20). Fitzpatrick (2008) derived similar conclusions in a study of Georgia's pre-K program. Fitzpatrick concluded the following:

Estimates presented show Universal Pre-K in Georgia led to lasting benefits on the academic achievement of children. Most notably, Universal Pre-K availability increased the test scores of disadvantaged (school-lunch-eligible)

children living in areas with relatively low levels of population density by as much as 12 percent of a standard deviation. Since the group of disadvantaged children in rural or urban fringe areas makes up about 19 percent of the student population in Georgia, these results are non-trivial. (Fitzpatrick, 2008, p. 31)

Vast amounts of research indicate that there is a positive relationship between pre-K, student achievement, and socioeconomic status. Data from some of the groundbreaking programs, such as the Abecedarian, Perry Preschool, and Child-Parent Center as well as newly established programs, indicate that children who are economically disadvantaged benefit the most from pre-K. The next section will examine the literature regarding the relationship of pre-K and student retention.

#### *Pre-K Enrollment and Student Retention*

Is there a relationship between pre-K attendance and student retention? Based on Gilliam and Zigler's (2004) study, "reduced grade retention appeared to be a rather robust impact for state prekindergarten programs, with cumulative effects that may last well beyond elementary and middle school" (Gilliam & Zigler, 2004, p. 34). After researching state prekindergarten programs across 18 states, Gilliam and Zigler formulated their conclusion. Results from the Abecedarian and Perry Preschool Programs mirror those of Gilliam and Zigler (2004). At the age of 15 years, children who had attended the Abecedarian program had a 31% retention rate as compared to a 55% retention rate for children who did not attend the program (Temple & Reynolds, 2007). At 15 years, children who had attended a Child-Parent Center had a 23% retention rate as compared to a 38% retention rate for children who did not attend the program (Temple & Reynolds, 2007).

“The High/Scope Education Research Foundation conducted a longitudinal study of the *Michigan School Readiness Program* (MSRP), tracking the progress of children who entered pre-K in 1995” (Wat, 2010, p. 3). When pre-K participants had finished the fourth grade, they were 35% less likely to have repeated a grade, as compared to children who had not attended the MSRP (Wat, 2010). At the end of the eighth grade, children who had attended the MSRP were 33% less likely to have repeated a grade as compared to children who had not attended the MSRP (Wat, 2010).

As a result of a New Jersey Supreme Court case, the Abbott Preschool Program was established (Frede, 2009). The program was designed to close the achievement gap of children in low-income, urban districts throughout the state (Frede, 2009). In the 1999-2000 school year, full-day pre-K served approximately 19,000 children (Frede, 2009). In the 2008-2009 school year, the program had an enrollment of around 44,000 children (Frede, 2009). Beginning in 2005-2006, the National Institute for Early Education Research (NIEER) undertook a longitudinal study (Frede, 2009). Relative to student retention, the NIEER report stated the following:

Since study children have entered second grade we can investigate the effects of pre-K on early grade retention. By second grade the effect on grade retention of two years of pre-K is statistically significant ( $p < .05$ ) and twice as large as the effect of one year of pre-K. Grade repetition is 10.7 percent for children who did not attend pre-K, 7.2 percent for those who attended for one year, and 5.3 percent for those who attended two years. This reflects pre-K’s considerable effects on learning and ability and results in savings to taxpayers. (Frede, 2009, p. 5)

The LA4 Longitudinal Report, conducted by the Center for Child Development at the University of Louisiana at Lafayette, reported that approximately 36% of students who had participated in pre-K were less likely to be held back in kindergarten (Wat, 2010). Andrews and Slate (2001) provided results from the Ohio Department of Education's pre-K study, which indicated retention rates were lower for children who attended at least 6 months of some type of prekindergarten program (Andrews & Slate, 2001).

The studies presented were conducted in various states, yet the results remain the same. Grade retention is costly for taxpayers; more importantly, grade retention is predictive of numerous health and emotional risk factors (National Association of School Psychologists, 2003). To lower retention rates, the National Association of School Psychologists recommended the use of preschool programs to enhance language, social skills, and reading (2003).

#### *Pre-K Enrollment and School Readiness*

Do students who attended pre-K display better kindergarten readiness skills than their peers who did not attend pre-K? Before evaluating the existing research as it relates to kindergarten readiness skills, it is important that one have a general knowledge of the specific skills. To determine what a child should know before entering kindergarten depends on varying factors. There is no definition for *readiness* that applies to all children. The kindergarten curriculum is a determining factor in what a child needs to know prior to entry. State kindergarten curriculums vary; therefore, one must look at individual state guidelines to determine if a child possesses skills necessary for success in kindergarten. State statutes require that children reach the age of 5 years before or during kindergarten enrollment (Ackerman, 2005). Since readiness

for kindergarten is not solely determined by age, various testing instruments are often used to assess a child's prior knowledge (Ackerman, 2005). According to a NIEER Preschool Policy Brief, "69 percent of public schools and 47 percent of private schools throughout the country administer such tests before a child enrolls in kindergarten" (Ackerman, 2005, p. 5).

Louisiana's State Department of Education expects children entering kindergarten to display cognitive abilities which include, but are not limited to, phonological awareness, print concepts, recite and recognize letters in the alphabet, oral comprehension, emergent writing, rote counting, sorting, comparing, and patterning (Louisiana Department of Education, 2011). As reported by the National Child Care Information and Technical Assistance Center, kindergarten teachers expect children to display skills which include, but are not limited to, working independently as well as cooperatively with groups, finish tasks, listen to a story in a group, follow two- or three-step oral directions, share, follow rules, have fine motor skills, print his or her own name, know the names and sounds of the alphabet, sort shapes, and group items (National Child Care Information and Technical Assistance Center, n.d.).

Cognitive development, as measured by the Iowa Test of Basic Skills, indicated 5-year-old participants in the Child-Parent Center Program scored 49.6 (adjusted mean), as compared to 43.3 for children not enrolled in the program (Reynolds, 2002). Results of the Early Childhood Longitudinal Study–Kindergarten Class of 1998-99 (ECLS-K) concluded that pre-K raises English language arts and math scores at school entry (Magnuson et al., 2007). The Center for Public Education reported the following:

One of the most far-reaching recent studies found marked increases in children's skills across five states: Michigan, New Jersey, Oklahoma, South Carolina, and

West Virginia. Overall, children in state pre-k posted vocabulary scores that were 31 percent higher and math gains that were 44 percent higher than those of non-participants. (Center for Public Education, 2008, para. 6)

In Tulsa, Oklahoma, children who attended pre-K showed significant increases in letter-word identification, spelling, and applied problems (Center for Public Education, 2008). Kindergarten students in Florida are administered the Early Childhood Observation System (ECHOS) and the first two measures of the Florida Assessments for Instruction in Reading (FAIR) (Florida Department of Education, 2010). These assessments are administered during the first 30 days that a child is enrolled in kindergarten (Florida Department of Education, 2010). The 2009-2010 ECHO results indicated that 93% of children who completed pre-K were ready for kindergarten, as compared to 83% who did not participate in pre-K (Florida Department of Education, 2010). The 2009-2010 FAIR results indicated that 74% of children who had completed pre-K were ready for kindergarten, as compared to 55% of children who had not attended pre-K (Florida Department of Education, 2010).

Results indicated that children who attend a state pre-K program are better prepared for kindergarten. There is no predetermined method for measuring if a child is “ready” for kindergarten. Educators, parents, community leaders, and lawmakers have differing opinions of the knowledge and skills a child should possess upon entering kindergarten. In an effort to give teachers knowledge of a child’s existing knowledge, assessments often are given to students upon enrolling in kindergarten. The knowledge gleaned from these assessments enables teachers to meet the needs of individual children.

## Summary

A vast amount of literature exists that outlines the benefits of pre-K. This chapter contained research which evaluates state-funded pre-K programs. Both the economic and academic benefits of pre-K were explored. Thirty-eight states currently have a state-funded pre-K program; however, most programs require children to meet eligibility requirements. Using lottery revenues, Georgia was the first state to allow all 4-year-olds the opportunity to attend school. In 1998, Oklahoma funded pre-K for all 4-year-olds and has continually ranked first in the nation for percentage of students served in a state-funded program.

The Perry Preschool Experiment, Abecedarian Program, and Chicago Child-Parent Center provide large amounts of data on the benefits of pre-K. Each of the programs enrolled children based on their socioeconomic status. The cost-benefit ratio for each of the programs was based on educational resources, earnings, criminal activity, and welfare receipt. Substantial monetary benefits were calculated, indicating that states would have a hearty return on their investments.

Based on achievement test scores, the research indicated that there was a positive relationship between student achievement and pre-K attendance. The short-term benefits were the most prevalent; however, long-term benefits were also documented. Results of numerous studies indicated that disadvantaged children benefited most from a pre-K education.

Pre-K enrollment was linked to a lower rate of grade retention and to a higher percentage of students graduating from high school. Research varied on the relationship between pre-K enrollment and gender. The research on gender was not as readily available as one may desire. Some research indicated that there was no



statistical significance between the achievement levels of boys and girls who had attended pre-K. However, research in several studies found that girls who had attended pre-K performed better academically than boys who had attended pre-K.

Research indicated that kindergarten readiness correlates with pre-K attendance. Though there is no set definition of *readiness*, most states have created a list of cognitive, motor, and social skills a child should possess upon entering kindergarten. Numerous instruments are available to test readiness. In an effort to individualize instruction, kindergarten readiness tests are usually given at the beginning of the school year.

### CHAPTER III

#### METHODOLOGY

The methodology section contains information pertaining to the instruments and data that were used for this study. This section includes detailed accounts of the procedures that were used for collecting and analyzing the data. Demographics and achievement levels for the participating schools are discussed. An explanation of the Louisiana Educational Assessment Program (LEAP) is provided.

The purpose of this study was to determine if children who attended pre-kindergarten (pre-K) achieved better academically than children who did not attend pre-K, as measured by fourth-grade English language arts (ELA) and math LEAP scores. This chapter provides information regarding the schools that were used for this study. Demographics from 2010 are provided for each school, as well as school performance scores (SPS) from the 2009-2010 school year. State demographics and statistics are also discussed.

#### Research Design

The independent variables used for this study were pre-K attendance, gender, socioeconomic status, and student retention. The dependent variables were 2009-2010 fourth-grade LEAP math and ELA scores. To allow triangulation of data, quantitative and qualitative data were collected. Qualitative data was collected through a random sampling of teacher questionnaires. In an effort to ensure teacher participation, interview questions were kept to a minimum.

Subjects for this study were from 20 middle schools in a large suburban district located in a southern state. For the sake of clarity, middle school refers to schools which incorporate the fourth grade. The data used was from the 2009-2010 school year

when NCLB mandates were of adherence. The LEAP assessment is based on knowledge students should have acquired at the time of testing, known as Grade-Level Expectations (Louisiana Department of Education, 2010d). Students receive an achievement level score rather than a pass or fail (Louisiana Department of Education, 2010d).

The five achievement levels a student can score on the LEAP assessment are: Advanced, Mastery, Basic, Approaching Basic and Unsatisfactory. Students in 4<sup>th</sup> and 8<sup>th</sup> grade must score Basic or higher in either English or math and Approaching Basic or higher in the other subject on the LEAP (Louisiana Educational Assessment Program) to advance to the next grade. Fourth-graders have had to meet this requirement since 2004, while eighth graders have to meet this requirement since 2006. (Louisiana Department of Education, 2010d, para. 1-2)

Table 2 outlines the scaled score range that correlates with achievement levels for fourth-grade ELA, math, science, and social studies. The researcher obtained 2010 ELA and math scaled scores for each fourth grader. These scores were the dependent variables in the study.

Table 2

*Achievement Levels for Fourth-Grade LEAP*

Achievement level	Scaled Score Range			
	English	Mathematics	Science	Social Studies

Table 2 (continued).

Achievement level	Scaled Score Range			
	English	Mathematics	Science	Social Studies
Advanced	408-500	419-500	405-500	399-500
Mastery (Proficient)	354-407	370-418	360-404	353-398
Basic	301-353	315-369	306-359	301-352
Approaching Basic	263-300	282-314	263-305	272-300
Unsatisfactory	100-262	100-281	100-262	100-271

### Participants

The researcher retrieved data from 20 middle schools in a local geographic region. The geographic region had a 2010 population of 233,740; the medium household income between 2006 and 2010 was \$60,866 (U.S. Census Bureau, 2012). The area is one of the fastest growing areas in the state (St. Tammany Parish School Board, 2009a). Ethnicities in the region included 83.6% White, 11.4% Black, and 5% American Indian, Asian, or Hispanic (U.S. Census Bureau, 2012). In the 2010-2011 school year, the school district enrolled 37,221 students. School district ethnicities included .37% American Indian, 1.48% Asian, 19.15% Black, 3.59% Hispanic; and 75.08% White (St. Tammany Parish School Board, 2011). The state had an enrollment of 52.2% minority students (Louisiana Department of Education, 2010f). Approximately 45% of students in the targeted district qualified for free or reduced

lunch; 66% of students statewide qualified for free or reduced lunch (St. Tammany Parish School Board, 2011).

Kindergarten teachers in the targeted district were asked to fill out a questionnaire relating to kindergarten readiness. During the 2009-2010 school year, the district employed approximately 120 kindergarten teachers. All kindergarten teachers were required to have a bachelor's degree in early education.

Schools participating in this study represented varying degrees of socioeconomics and ethnicities. For purposes of anonymity, schools were assigned a letter of the alphabet. Letters A through T were used to represent schools. Each school had earned a School Performance Score (SPS); standardized test scores contributed the largest percentage to the SPS. One of the independent variables in this study was socioeconomics. Equipped with this knowledge, it was important to examine each school and determine how they compared in the realm of socioeconomics. Eight of the 20 schools fell into the third quartile, with percentages of students receiving free or reduced lunch ranging from 51% to 72%. Four schools fell into the second quartile, with percentages of students receiving free or reduced lunch ranging from 26% to 48% (Louisiana Department of Education, 2010e). Schools N and R are the only two schools located in the first quartile. Five schools fell into the fourth quartile, with School B having 97% of students who qualified for free or reduced lunch (Louisiana Department of Education, 2010e).

There was a large discrepancy in the size of schools that were involved in this study. School L had the highest enrollment of 1,004 students, while School C had the lowest enrollment with 205 students. Just as all schools earn a SPS, each school is assigned a performance label. Performance labels are assigned based on the school's

SPS and are as follows: 60.0-79.9 = One Star; 80.0-99.9 = Two Stars; 100.0-119.9 = Three Stars; 120.0-139.9 = Four Stars; and 140.0 and above = Five Stars (Louisiana Department of Education, 2010i). Schools receiving one star are considered academically unacceptable. Schools A-T received labels ranging from two stars to four stars (Louisiana Department of Education, 2010h). Tables 3 and 4 contain information pertaining to each school participating in the study. Information in Table 3 includes enrollment, percentage of students receiving free or reduced lunch, percentage of students by gender, and percentage of students by ethnicity. Table 4 includes School Performance Scores and Performance Labels.

As one examines the data, patterns emerge. Schools J, N, and R have a 4-star label. Consequently, schools J, N, and R have the lowest numbers of students receiving free or reduced lunch. School B has the lowest SPS (75.7%) and the highest number of students who qualify for free and reduced lunch (97%). However, School T has 96% of the student population eligible for free or reduced lunch and has a SPS of 90.3. Schools B and T have approximately the same percentage of students eligible to receive free or reduced lunch, yet School T outperformed School B. The number of minority students at Schools B and T are closely related. School B has 72.64% minority students, while School T has 70.79% minority students. The biggest difference in Schools B and T appear to be gender. School B has 52% female students, while School T has 43% female students. Examining the data leaves one with many questions. How many of the students were enrolled in preschool? Do schools perform better solely based on higher socioeconomics? Did attending a quality preschool increase student performance? The goal of this study was to provide district and state administrators with pertinent information that may be used in future curricula and fiscal decisions.

Table 3

*Demographics for Schools A-T*

School ID	Enrollment	%		%		%
		Females	Males	Black	White	Free/Reduced
A	473	51.59	48.41	13.32	82.88	51
B	212	52.36	47.64	72.64	25.00	97
C	205	47.80	52.20	53.66	41.46	84
D	764	51.31	48.69	16.62	77.49	48
E	564	45.74	54.26	48.58	46.81	67
F	608	48.84	51.15	20.23	75.00	53
G	564	46.45	53.55	2.66	95.74	57
H	585	49.23	50.77	32.48	55.73	72
I	495	46.26	53.74	22.02	73.54	69
J	664	47.44	52.56	7.88	86.60	26
K	763	48.23	51.77	0.79	97.12	57
L	1,004	44.62	55.38	15.54	77.09	35
P	495	49.49	50.51	5.25	92.53	65
Q	422	46.45	53.55	0.00	99.05	82
R	873	46.16	53.84	5.27	89.35	17
S	995	46.83	53.17	49.05	44.32	80
T	315	43.81	56.19	70.79	24.44	96

Source: Louisiana Department of Education (2010i)

Table 4

*School Performance Scores and Performance Labels for Schools A-T*

School ID	School Performance Score	School Performance Label
A	108.4	2 Stars
B	75.7	2 Stars
C	84.2	2 Stars
D	111.8	3 Stars
E	85.7	2 Stars
F	104.7	3 Stars
G	98.3	2 Stars
H	94.6	2 Stars
I	102.8	3 Stars
J	120.9	4 Stars
K	110.3	3 Stars
L	116.1	3 Stars
M	110.4	3 Stars
N	124.1	4 Stars
O	95.1	2 Stars
P	100.3	2 Stars
Q	98.9	2 Stars
R	131.1	4 Stars



Table 4 (continued).

School ID	School Performance Score	School Performance Label
S	87.0	2 Stars
T	90.3	2 Stars

### Instrumentation

A self-designed instrument (see Appendix A) was used to collect the qualitative data. The instrument consisted of six questions which related to kindergarten readiness. Questions allowed the researcher to collect information pertaining to the participants' perceptions about what a child should know upon entering kindergarten. Questions also focused on the differences that participants observed between students who had attended pre-K, as compared to those who had not attended pre-K. These differences served to provide insight into Research Question 2. The quantitative data was obtained from the district's student information system (SIS) which contained data needed for this study: LEAP test scores, gender, socioeconomics, and student retention. Since the SIS did not have information about pre-K attendance, a list of students enrolled in pre-kindergarten in 2004-2005 was obtained from attendance books. For anonymity purposes, all data was identified by student ID numbers. These items allowed a statistical analysis of the data and provided answers to Research Questions 1, 2, 3, and 4.

### Procedures

After receiving Institutional Review Board approval to proceed with this study (see Appendix B), the researcher wrote a letter (see Appendix C) to the district

superintendent requesting permission to conduct the study. The letter included a detailed explanation of the study, as well as a consent form (see Appendix D) for the superintendent to sign. After receiving the signed consent form, the researcher met with administrators at each school. The researcher gave a copy of the superintendent's consent form and teacher questionnaires to each school level administrator and requested that he or she distribute the questionnaires to kindergarten teachers. A letter of explanation accompanied the questionnaires (see Appendix E). For purposes of anonymity, each school in the study was coded with a different color. This procedure allowed the researcher to determine how many kindergarten teachers at each school participated in the study. For teacher convenience, a self-addressed, stamped envelope was attached to each teacher questionnaire. It was the hope of this researcher that teachers would respond to hand-delivered interview questions more readily than questions received in the mail.

The second part of the study involved information relating to student LEAP scores and demographics. The researcher met with the Director of Information Technology and requested a data disc with the following information: LEAP math and ELA scores, socioeconomic status, gender, and student retention for students who attended fourth grade in the 2009-2010 school year. The information requested was available on the SIS. In an effort to keep subjects' anonymity, researcher requested that student identification numbers (ID) be used in lieu of names. The next step in this process involved the researcher meeting with the pre-K supervisor. The purpose of the meeting was to explain the study and request a list of subjects (identified by ID number) who attended pre-K in the 2004-2005 school year. The list had to be obtained from 2004-2005 attendance books which were kept in storage. Once the researcher had the

data disc and the list of 2004-2005 pre-K students, the information will be cross-referenced. If data indicated that a student had been retained, his or her ID number was used to cross-reference pre-K attendance from the 2003-2004 school year.

When the quantitative data had been collected, it was placed into an Excel file. The Excel file allowed for a smooth transition of data to SPSS. The qualitative data was reviewed and responses included in Chapter IV. All data was held in a secure place and destroyed by researcher upon completion of study. Data and questionnaire responses were viewed solely by the researcher and members of the researcher's committee.

### Data Analysis

Data analysis was conducted using SPSS. Teacher questionnaires (qualitative data) were transcribed and analyzed for common themes. A nominal scale of measurement was used to code identified themes and run a frequency distribution. Crosstabs were used to analyze the frequencies of each combination of variables. A chi-square analysis was conducted to determine if the variables, socioeconomics, gender, and grade retention, were independent of teacher identified traits.

Descriptive statistics enabled the researcher to analyze and summarize quantitative data in an effective and understandable manner. Mean scores, standard deviations, frequencies, and correlation were included in the descriptive analysis of the data. Areas that contain outliers were discussed. Charts, tables, and graphs were used to present the findings.

An independent t test was used to analyze the differences between the means of the two groups: those who had attended pre-K and those who had not attended pre-K. A level of significance of .05 was used. An analysis of variance (ANOVA) was

conducted to analyze the data relating to gender, socioeconomics, and retention rates. Dependent variables included LEAP math and ELA scores. Independent variables included socioeconomics, gender, and grade retention. The findings, which are discussed in Chapter IV, allowed the researcher to determine if enrollment in pre-K had a statistically significant impact on student achievement. District leaders were presented with a completed copy of the study.

### Summary

Quantitative and qualitative data were used to determine if there was a statistically significant relationship between students who attended pre-K and those who had not attended pre-K. Fourth grade math and ELA scores were the dependent variables, with gender, student retention rates, and socioeconomics being the independent variables. Descriptive statistics, *t* tests, and ANOVA were conducted on data. Teacher responses to questionnaires were evaluated to determine teachers' perspectives of kindergarten readiness skills and how those skills related to students who had attended pre-K versus students who had not attended pre-K. All information for this study was kept anonymous with data being destroyed upon completion of this study.

## CHAPTER IV

### RESULTS

This study examined four factors (pre-K attendance, gender, socioeconomic status, and student retention) and the impact those factors had on student achievement at the fourth-grade level. A list of students who attended pre-kindergarten (pre-K) in the public school system during the 2004-2005 school term was cross-referenced with students who took the 2009-2010 Louisiana Educational Assessment Program (LEAP). Due to grade retention, 285 of these students had taken the third grade iLEAP. The iLEAP is not considered a high-stakes test, as one does not have to score within a certain range to be promoted to the next grade level. However, all other aspects of the iLEAP are comparable to the LEAP. This study used ELA and math scaled scores from 2009-2010 iLEAP (third graders) and LEAP (fourth graders) to determine if pre-K attendance had a statistically significant impact on student achievement. Twenty-seven students who were enrolled in pre-K during the 2004-2005 school year had untraceable data, indicating that the students are no longer enrolled in the school district.

The qualitative component of this study involved kindergarten teachers' perspectives relating to pre-K. This researcher had originally planned to analyze a random sampling of kindergarten teachers; however, desiring a more robust study, all kindergarten teachers in the district received a questionnaire. The questionnaire contained six questions, which allowed individual teachers to compare kindergarten readiness of students who had attended pre-K to those who had not attended pre-K. Of the 129 questionnaires distributed, 57 were returned for a return rate of 44%. This chapter presents and analyzes a compilation of the data.

## Data

Independent variables for this study included pre-K attendance, gender, socioeconomic status, and grade retention. Dependent variables included English language arts and math-scaled scores. Table 5 depicts the frequencies and percentages of each of the independent variables: gender, students enrolled in pre-K during the 2004-2005 school year, socioeconomic status of the subjects used in this study, and subjects' retention rates prior to fourth grade. The study population was 41.6% female and 48% male. Gender information was not available for five of the subjects. The population total for attending pre-school in the public school system was 21.7%, as compared to 68.0% who did not attend pre-K in the public school system. Data regarding private school pre-K attendance were unavailable. Data relating to socioeconomic status show that the percentages of subjects who were classified as economically disadvantaged (44.5%) were almost equivalent to those who were not economically disadvantaged (44.4%). One subject's socioeconomic status was unknown. Grade retention data indicated 285 students (8.2%) were retained, as compared to 2,827 (81.5%) who were never retained. An evaluation of the table reveals that this research study will include more males than females, fewer subjects who attended public school pre-K, a nearly identical distribution of subjects based on socioeconomic status, and a small percentage of students who were retained prior to entering the fourth grade.

Table 5

*Frequencies and Percentages of Independent Variables of Students Enrolled in Pre-K  
During the 2004-2005 School Year*

Independent variable	<i>f</i>	%
Gender		
Female	1,442	41.6
Male	1,665	48.0
Unknown	5	.1
Pre-K attendance		
Enrolled	754	21.7
Not Enrolled	2,358	68.0
Socioeconomic status		
Free and reduced lunch	1,544	44.5
Not free or reduced lunch	1,541	44.4
Unknown	1	.0
Student retention prior to fourth grade		
Retained	285	8.2
Not retained	2,827	81.5

The population for this study included 3,112 subjects. Table 6 shows the group statistics, LEAP English language arts and math mean scores and standard deviations, for subjects who attended pre-K and those who did not attend pre-K. Prior to advancing

to the next grade level, students in fourth grade must score Basic or higher in either English or math and Approaching Basic or higher in the other subject. A scaled score of 282 is required for the Approaching Basic level in math and 263 for Approaching Basic in English. A scaled score of 315 is required for the Basic level in math and 301 for English. Based on the mean scores (see Table 6), all students reached the Basic level in English and math.

Table 6

*Group Statistics for Pre-K*

Scaled score	Pre-K	<i>n</i>	<i>M</i>	<i>SD</i>
ELA	No	2,350	340.65	54.95
	Yes	754	314.75	62.44
Math	No	2,354	358.23	52.47
	Yes	753	334.76	62.31

*Research Questions*

*Research question 1. Is there a relationship between pre-K attendance and student achievement?* Fourth grade LEAP English language arts (ELA) and math-scaled scores were used for analyses. An independent *t* test was used to determine if a statistically significant relationship between pre-K attendance and student achievement existed. Using Levene's Test for Equality of Variances, equal variances could not be assumed; therefore, the separate variance estimate *t* test was used. In math, the *t* test revealed statistically significant results with  $t(1,114) = 9.33, p < .001$ . The results of the



$t$  test in English language arts also showed a statistically significant difference with  $t(1,151) = 10.19, p < .001$ . Therefore, based on these scores, one can conclude that pre-K attendance did not improve fourth-grade LEAP math and ELA scores. In fact, students who did not attend pre-K had higher scores in both math and English language arts.

*Research question 2. Is there a relationship between gender, pre-K attendance, and student achievement?* Fourth-grade LEAP math and ELA scaled scores were the dependent variables used to investigate this question. The independent variables were gender and pre-K attendance. A two-way ANOVA was conducted to determine if results were statistically significant or non-significant. Table 7 reports descriptive statistics of pre-K attendance by gender, using LEAP English language arts scaled scores as the dependent variable. Table 8 reports descriptive statistics of pre-K attendance by gender, using math-scaled scores as the dependent variable. The ANOVA was calculated comparing the LEAP English Language Arts scaled scores by gender and pre-K attendance. A significant main effect for gender was found,  $F(1, 3,095) = 48.53, p < .001$ . A significant main effect for pre-K attendance was found,  $F(1, 3,095) = 109.66, p < .001$ . The interaction between gender and pre-K attendance was also significant,  $F(1, 3,095) = 4.597, p = .032$ . As depicted in Figure 1, females achieved higher English language arts scaled scores on the LEAP than males regardless of pre-kindergarten attendance. Furthermore, the achievement gap is wider for students who attended pre-K, as compared to those who did not attend pre-K.

An ANOVA was also conducted to compare LEAP math scores by gender and pre-K attendance. A significant main effect for pre-K attendance was found ( $F(1,3098) = 100.748, p < .001$ ). The ANOVA for gender was non-significant. The interaction

between gender and pre-K together was also non-significant. As shown in Figure 2, students who did not attend pre-k achieved higher scaled scores on the math portion of the LEAP, than students who attended pre-k, regardless of gender.

Table 7

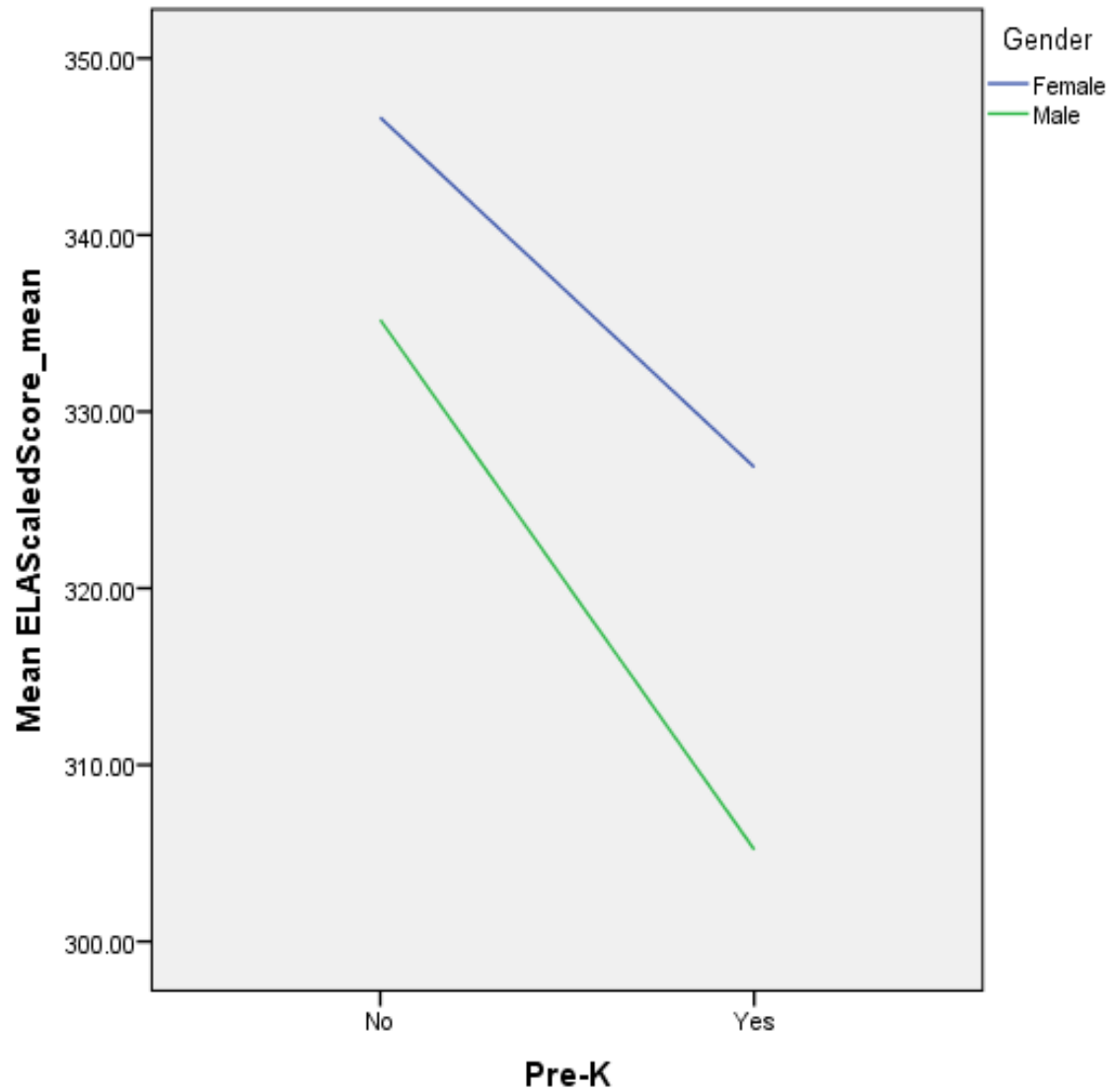
*Number of Students, Mean Scale Scores, and Standard Deviation of Students' ELA Scale Scores Organized by Gender*

Pre-K	<i>n</i>	<i>M</i>	<i>SD</i>
Yes			
Female	332	326.86	55.95
Male	422	305.21	65.61
Total	754	314.75	62.44
No			
Female	1,107	346.66	54.66
Male	1,238	335.19	54.72
Total	2,345	340.61	54.98
Total			
Female	1,439	342.09	55.57
Male	1,660	327.57	59.13
Total	3,099	334.31	57.95

Table 8

*Number of Students, Mean Scale Scores, and Standard Deviation of Students' Math Scale Scores Organized by Gender*

Pre-K	<i>n</i>	<i>M</i>	<i>SD</i>
Yes			
Female	332	336.37	59.42
Male	421	333.49	64.63
Total	753	334.76	62.31
No			
Female	1,108	357.38	50.49
Male	1,241	359.02	54.21
Total	2,349	358.24	52.49
Total			
Female	1,440	352.53	53.40
Male	1,662	352.55	58.06
Total	3,102	352.54	55.94



*Figure 1.* The interaction between gender of students and pre-K attendance with the mean of English language arts scaled scores used as the dependent variable.

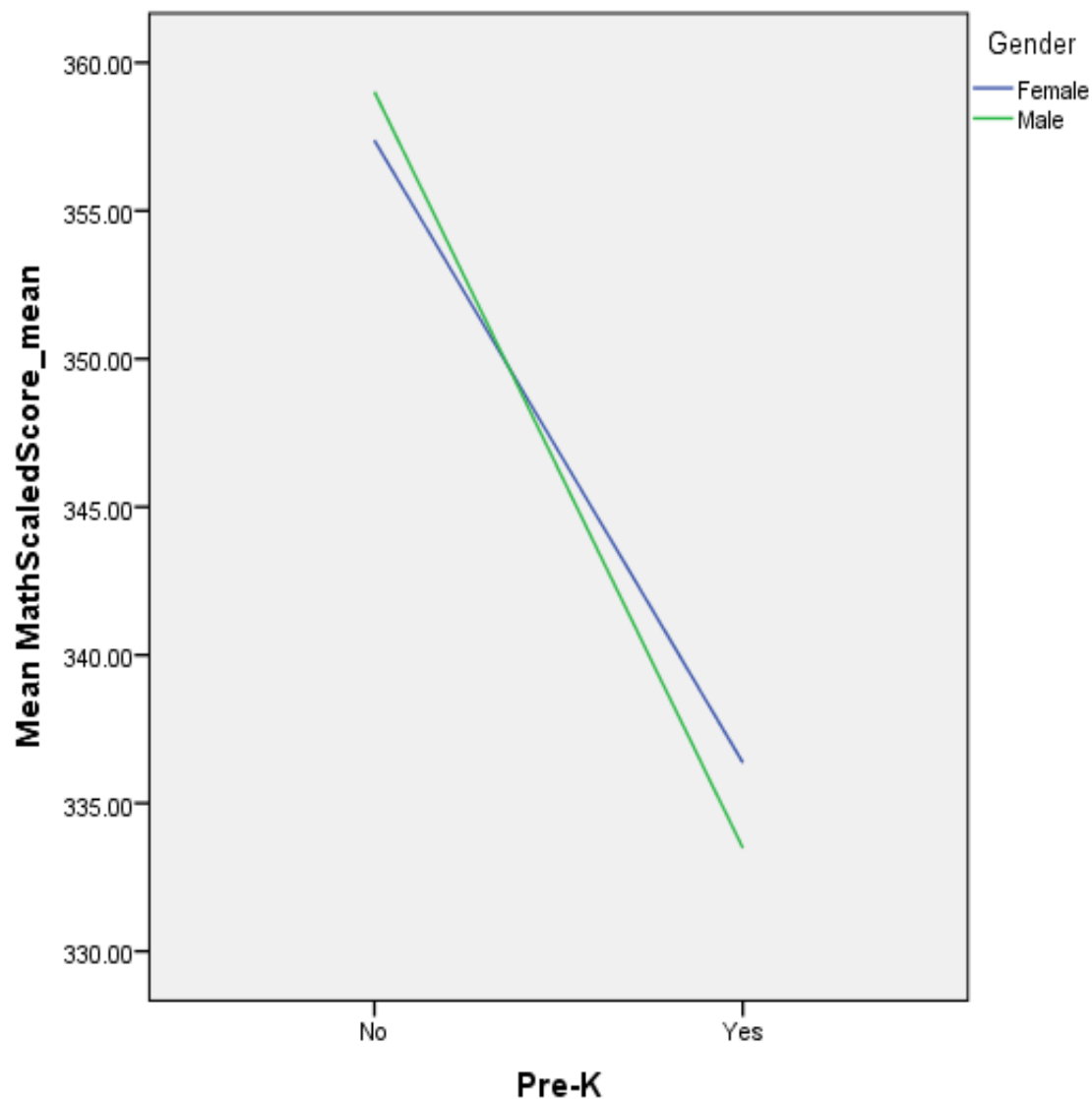


Figure 2. The interaction between gender of students and pre-K attendance with the mean of math scaled scores used as the dependent variable.

*Research question 3. Is there a relationship between the socioeconomic status of students who attended pre-K and student achievement?* Fourth grade LEAP math and ELA scaled scores were the dependent variables used to investigate question three. The independent variables were socioeconomic status (SES) and pre-K attendance. A two-way ANOVA was conducted to determine if results were statistically significant or non-significant. Table 9 reports descriptive statistics of pre-K attendance by SES, using

LEAP English language arts scaled scores as the dependent variable. Table 10 reports descriptive statistics of pre-K attendance by SES, using math scaled scores as the dependent variable. An ANOVA was calculated comparing the LEAP English Language Arts scaled scores by SES and pre-K attendance. A significant main effect for SES was found,  $F(1, 3,073) = 144.243, p < .001$ . A significant main effect for pre-K attendance was found,  $F(1, 3,073) = 64.404, p < .001$ . The interaction between SES and pre-K attendance was also significant,  $F(1, 3,073) = 14.550, p < .001$ . As shown in Figure 3, students from middle or high socioeconomic backgrounds, scored higher on the English Language arts portion of the LEAP than students from low socioeconomic backgrounds regardless of pre-K attendance. Further examination of the graph clearly indicates that students who did not attend pre-K scored higher on the English language arts section of the LEAP than students who attended pre-K, regardless of SES.

An ANOVA was calculated comparing the LEAP math scaled scores by SES and pre-K attendance. A significant main effect for SES was found,  $F(1, 3,076) = 147.015, p < .001$ . A significant main effect for pre-K attendance was found,  $F(1, 3,076) = 52.778, p < .001$ . The interaction between SES and pre-K attendance was also significant,  $F(1, 3,076) = 8.542, p = .003$ . As shown in Figure 4, students from middle or high socioeconomic backgrounds, scored higher on the math portion of the LEAP than students from low socioeconomic backgrounds, regardless of pre-K attendance. Further examination of the graph clearly indicates that students who did not attend pre-K scored higher on the math section of the LEAP than students who attended pre-K, regardless of SES.

Table 9

*Number of Students, Mean Scale Scores, and Standard Deviation of Students' ELA Scaled Scores Organized by Socioeconomic Status*

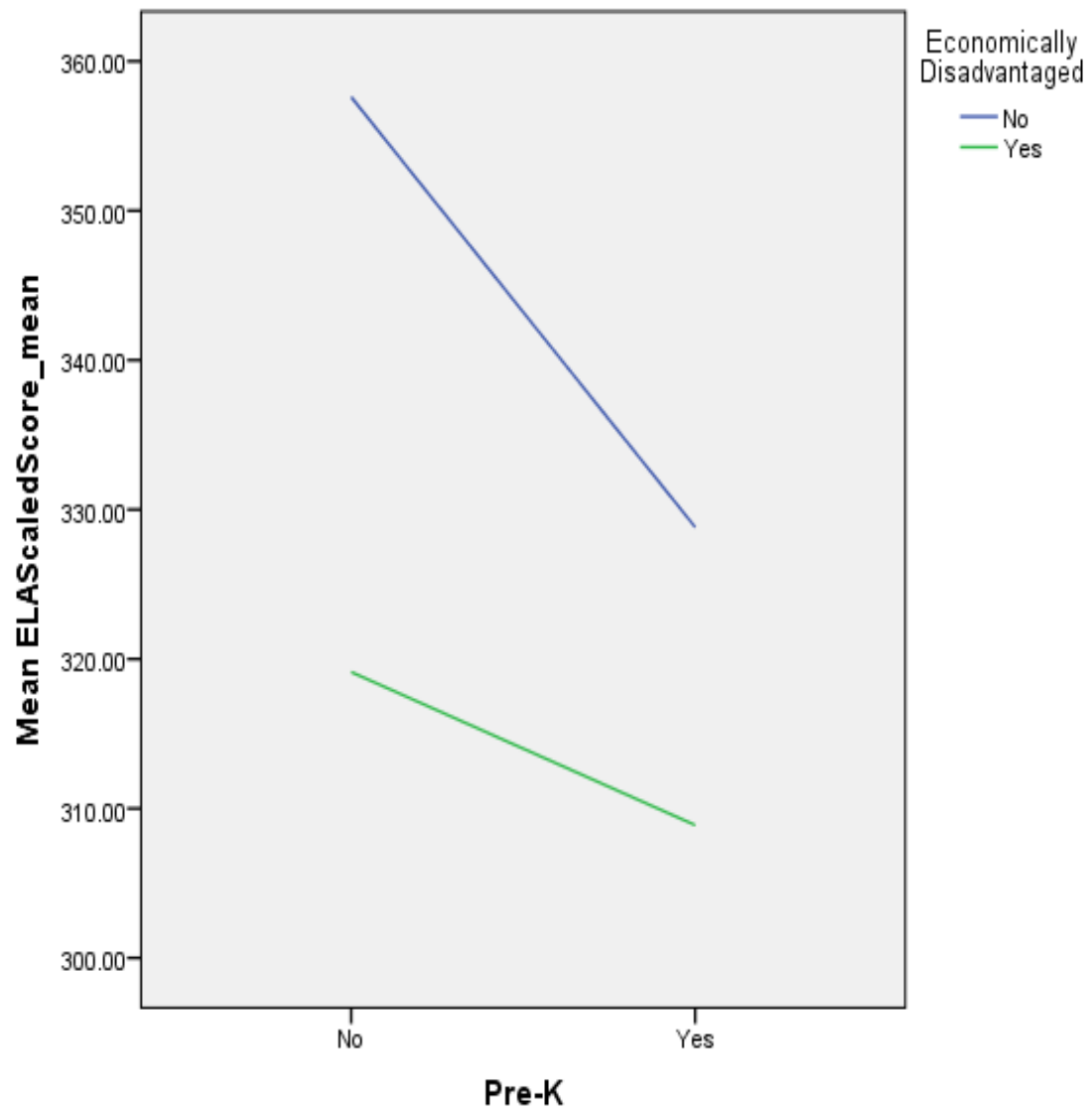
Pre-K	<i>n</i>	<i>M</i>	<i>SD</i>
Yes			
Not free and reduced lunch	228	328.82	69.724
Free and reduced lunch	523	308.89	57.555
Total	751	314.94	62.137
No			
Not free and reduced lunch	1,311	357.60	50.556
Free and reduced lunch	1,015	319.13	53.032
Total	2,326	340.81	55.055
Total			
Not free and reduced lunch	1,539	353.34	54.765
Free and reduced lunch	1,538	315.64	54.809
Total	3,077	334.50	57.931

Table 10

*Number of Students, Mean Scale Scores, and Standard Deviation of Students' Math Scaled Scores Organized by Socioeconomic Status*

Pre-K	<i>n</i>	<i>M</i>	<i>SD</i>
Yes			
Not free and reduced lunch	227	350.07	71.578
Free and reduced lunch	523	328.37	56.230
Total	750	334.94	62.041
No			
Not free and reduced lunch	1,312	374.11	49.507
Free and reduced lunch	1,018	338.61	52.455
Total	2,326	340.81	55.055
Total			
Not free and reduced lunch	1,539	353.34	54.765
Free and reduced lunch	1,538	315.64	54.809





*Figure 3.* The interaction between socioeconomic background of students and pre-K attendance with the mean of English language arts scaled scores used as the dependent variable.

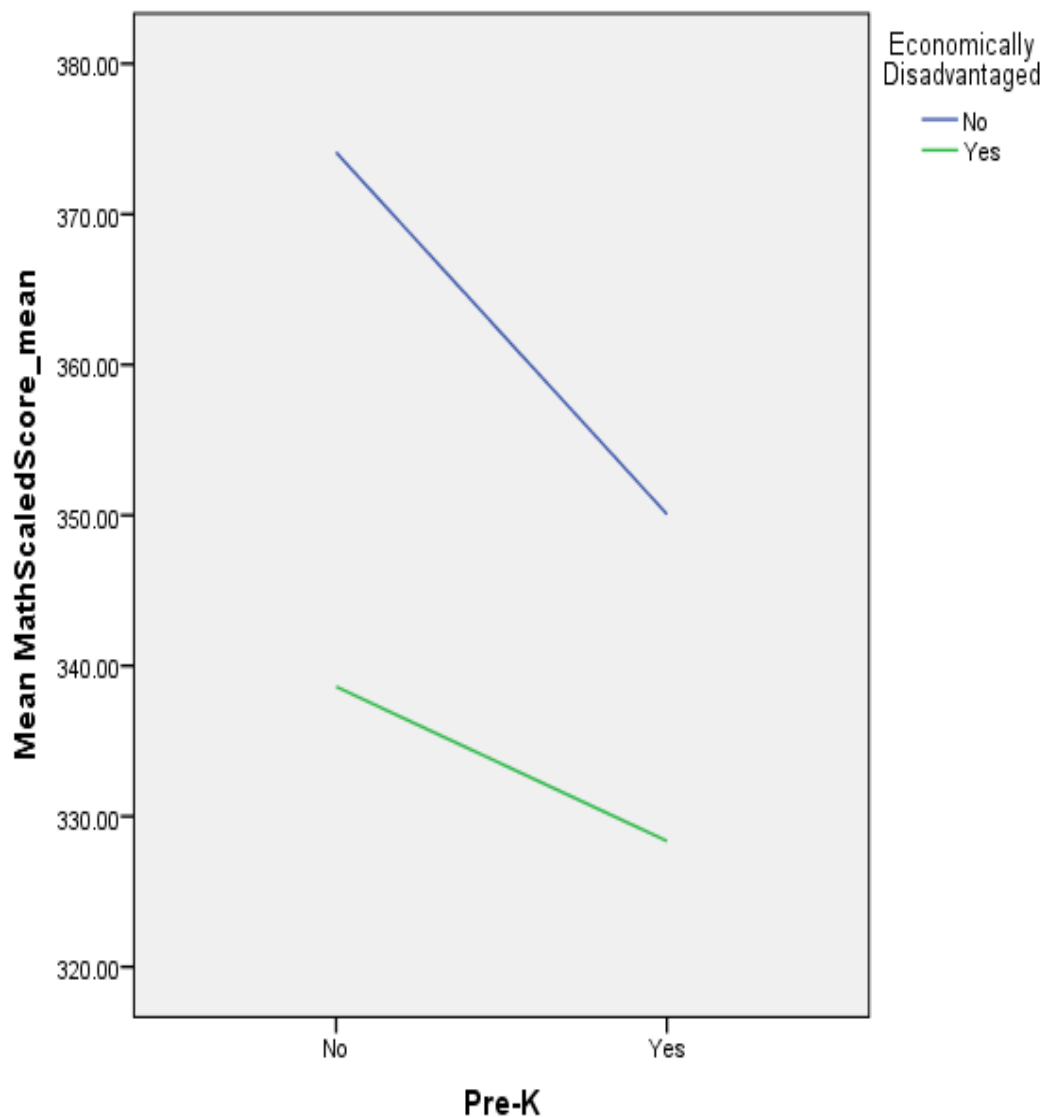


Figure 4. The interaction between gender of students and pre-K attendance with the mean of math scaled scores used as the dependent variable.

*Research question 4. Is there a relationship between pre-K attendance and student retention?* To investigate Research Question 4, a cross-tabulation was performed. Table 11 indicates that a total of 754 students attended a public school pre-K in 2004-2005, while 2,358 students did not attend public school pre-K. Cross-tabulation indicated that 285 students who attended pre-K in the 2004-2005 school year were retained prior to entering fourth grade. Students who attended public school pre-K

had a 62.2% promotion rate and a 37.8% retention rate. Students who did not attend public school pre-K had a 100% promotion rate.

Table 11

*Cross-tabulation Between Pre-K Attendance and Student Retention*

		Pre-K		Total
		Yes	No	
Retention	Yes	Count	285	0
		% within pre-K	37.8	0.0
	No	Count	469	2,358
		% within pre-K	62.2	100.0
	Total	Count	754	2,358
		% within pre-K	100.0	100.0

*Research question 5. Do students who attended pre-K display better kindergarten readiness skills than their peers who did not attend pre-k?* Question 5 is qualitative by design. Every kindergarten teacher ( $N = 129$ ) in the district received a questionnaire which contained six questions. Fifty-seven (44%) teachers chose to participate in this research study. Following is a breakdown of each question, including the statistical tool used for analyses and the results of the analyses.

*What do you expect a child to know and be able to do upon entering kindergarten?* Six major areas were identified as skills children should possess upon

entering kindergarten: (a) identify some letters, (b) rote count to 10 or higher, (c) ability to attend to personal needs, (d) write first name, (e) know basic colors, and (f) follow two-to-three step directions. In an effort to determine both the numbers and percentages of teachers who identified a specific kindergarten readiness skill, a frequency distribution was conducted. Letter identification and follow two-to-three step directions upon entering kindergarten was expected from 35 (61.4%) teachers, as opposed to 22 (38.6%) teachers who do not expect a child to identify some letters or follow two-to-three step directions upon entering kindergarten. Children entering kindergarten were expected to be able to count to 10 or higher by 25 (47.4%) teachers, while 30 (52.6%) teachers did not have that expectation. A kindergarten readiness skill identified by 23 (40.4%) teachers was having a child attend to his or her personal needs, while 32 (56.1%) teachers did not expect a child to be able to attend to his or her personal needs upon entering kindergarten. Children were expected to write their first names and know basic colors by 34 (59.6%) teachers, as opposed to 23 (40.4%) teachers who did not have this expectation. After analyzing the data, one can determine that the largest percentage of kindergarten teachers expect a child to be able to identify some letters and write his or her name upon entry into kindergarten.

*When a child enters kindergarten, can you accurately determine which students participated in a pre-K program? If so, what are the key indicators?* Based on the following key indicators (social/emotional readiness, adapts to routines, identifies letters of the alphabet, writes first name, and possesses phonemic awareness), 25 (43.9%) kindergarten teachers could identify students who had participated in a pre-K program, while 32 (56.1%) could not identify students who had participated in a pre-K program. In an effort to determine both the numbers and percentages of teachers who

identified a specific pre-K indicator, a frequency distribution was conducted.

Social/emotional readiness was identified by 25 (43.9%) teachers as a key indicator in determining if a child had attended pre-K. A child who adapts easily to routines was identified by 19 (33.3%) teachers as having attended pre-K. Letter identification was a pre-K indicator for 9 (15.8%) teachers, while 12 (21.1%) teachers identified a child who could write his or her name as one who had attended pre-K. Phonemic awareness helped 8 (14%) teachers determine which children had attended pre-K. A majority of kindergarten teachers who could determine when a child had attended pre-K made the determination based on the social/emotional readiness of the child.

*At the end of the kindergarten year, do you see a difference in the gains made by students who attended pre-K, as compared to the gains made by students who did not attend pre-K? If so, in what areas?* At the end of kindergarten, 28 (49.1%) teachers could determine a difference in gains made by students who attended pre-K, as compared to 26 (45.6%) teachers who could not determine such a difference. New teachers accounted for 5.3% of the population; therefore, they were unable to answer the question since they had not completed a full year with kindergarten students. The top three gains teachers identified were early literacy skills, greater academic growth, and all academic and non-academic areas. To determine both the numbers and percentages of teachers who identified the gains made by students who had attended pre-K, a frequency distribution was conducted. Early literacy skills were identified by 17 (29.8%) teachers as an area where pre-K attendees made greater gains than students who had not attended pre-K. Eight (14.0%) teachers felt that students who attended pre-K made greater gains in all areas, as compared to students who had not attended pre-K. Greater academic growth was identified by 6 (10.5%) teachers as an area of

increased growth by students who had attended pre-K. A slightly larger percentage of teachers could identify greater gains at the end of kindergarten by students who had attended pre-K.

*In your experience, do males or females benefit more from pre-K? Please explain.* The population was closely split with 28 (49.1%) teachers indicating both males and females benefitted equally from attending pre-K, while 29 (50.9%) teachers indicated that males benefitted more from attending pre-K than females. Social skills was the area identified by 29 (50.9%) teachers, as the area having the most benefit for males, while 3 (.05%) teachers identified social skills as the area having the most benefit for females. An overall benefit for both males and females who attended pre-K was observed by 5 (.09%) kindergarten teachers.

To further investigate the relationship between gender and pre-K attendance, using the data acquired for the quantitative portion of this study, a cross-tabulation was performed. Table 12 indicates 332 (44%) females attended pre-K during the 2004-2005 school year, while 422 (56%) males attended pre-K during the same time period.

Table 12

*Cross-tabulation Between Pre-K Attendance and Gender*

		Pre-K		
		Yes	No	Total
Gender	Count	332	1,110	1,442
	% within pre-K	44.0	47.2	46.4

Table 12 (continued).

		Pre-K		
		Yes	No	Total
Male	Count	422	1,234	1,665
	% within pre-K	56.0	52.8	53.6
Total	Count	754	2,253	3,107
	% within pre-K	100.0	100.0	100.0

*What differences do you observe between males and females who have attended pre-K?* Transcription of data for questions 4 and 5 indicated to the researcher that the questions were too closely related. The vast majority of teachers either repeated the exact answer given for number 4 or chose to omit the question. Therefore, question 5 was deleted from statistical analyses.

*What differences do you observe with children from low socioeconomic families who have attended pre-K, as compared to children from middle- or high-income families who attended pre-K?* Attending pre-K helped “close the learning gap” between students from low and high socioeconomic backgrounds, according to 11 (19.3%) teachers. However, 6 (10.5%) teachers indicated students from middle or high SES backgrounds tended to do better overall. According to 5 (8.8%) teachers, students from low SES backgrounds gained more than middle or high SES backgrounds.

To further investigate the relationship between SES and pre-K attendance, using the data acquired for the quantitative portion of this study, a cross-tabulation was performed. Table 13 shows 523 (69.6%) students from low SES backgrounds attended public school pre-K during the 2004-2005 school year, while 228 (30.4%) students from middle or high SES backgrounds attended pre-K during the same time period.

Percentages indicated that students from low SES backgrounds are more likely to attend pre-K in the public school system than students from middle or high SES backgrounds.

Table 13

*Cross-tabulation Between Pre-K Attendance and SES Background*

		Pre-K		Total
		Yes	No	
SES	Yes	Count	523	1,021
		% within pre-K	69.6	43.7
	No	Count	228	1,313
		% within pre-K	30.4	56.3
	Total	Count	751	2,334
		% within pre-K	100.0	100.0

Research Question 5 asked, “Do students who attended pre-K display better kindergarten readiness skills than their peers who did not attend pre-k?” Based on skills students exhibited upon entry into kindergarten, 25 (43.9%) kindergarten teachers could



identify students who had participated in a pre-K program, while 32 (56.1%) teachers could not identify students who had participated in a pre-K program. At the end of kindergarten, 28 (49.1%) teachers could determine a difference in gains made by students who attended pre-K, as compared to 26 (45.6%) teachers who could not make such a determination. According to 28 (49.1%) teachers, males and females benefitted equally from attending pre-K; however, 29 (50.9%) teachers indicated that males benefitted the most from attending pre-K. Based on observations from 11 (19.3%) teachers, pre-K attendance helped “close the learning gap” between students from low SES backgrounds, as compared to students from middle or high SES backgrounds. A review of the data revealed males who have attended pre-K display better readiness skills than females, while students from low SES backgrounds appear to reap greater benefits from pre-K attendance than students from middle or high SES backgrounds.

### Summary

This research study analyzed the relationship of pre-K attendance to student achievement. Each of the four independent variables (pre-K attendance, gender, socioeconomic status, and student retention) was analyzed against fourth grade LEAP math and ELA scaled scores. A qualitative component that included a teacher questionnaire regarding pre-K attendance as it relates to kindergarten readiness was included in this study. Statistically significant results were obtained when testing pre-K attendance against LEAP math and ELA scaled scores. Pre-K attendance did not improve fourth grade LEAP math and ELA scores. Students who did not attend pre-K had higher scores in both math and English language arts. Gender and pre-K attendance together proved to be statistically significant with females achieving higher LEAP English language arts scaled scores than males regardless of pre-kindergarten

attendance. When using math as the dependent variable, a significant main effect also was discovered. Students who did not attend pre-K achieved higher scaled scores on the math portion of the LEAP than students who attended pre-K, regardless of gender. In addition, the achievement gap is wider for students who attended pre-K, as compared to those who did not attend pre-K. A significant main effect was found for SES. Students from middle or high socioeconomic backgrounds scored higher on the English Language arts and math portions of the LEAP than students from low socioeconomic backgrounds, regardless of pre-K attendance. However, students who did not attend pre-K scored higher in English and math than students who attended pre-K. A significant interaction was found for pre-K attendance and student retention. Students who attended public school pre-K had a 62.2% promotion rate and a 37.8% retention rate. Students who did not attend pre-K had a 100% promotion rate. The qualitative data revealed that males who attend pre-K display better kindergarten readiness skills than females. Students from low SES background appear to gain more benefits from pre-K than students from middle or high SES backgrounds with most of the benefits being in the social/emotional realm.

## CHAPTER V

### SUMMARY

An in-depth study to determine if a relationship exists between pre-K attendance and student achievement was conducted. As with the magnitude of research conducted prior to this study, results are mixed. This chapter will disclose results of each of the research questions and link literature that will either connect or disconnect the results to past research studies. This chapter will give recommendations for policy and practice that lawmakers and school leaders may find beneficial in decision making as related to pre-kindergarten. The limitations imposed in this research study will be disclosed and discussed. Recommendations for future research will be presented. As a final component, a summary of this research study will be provided.

### Conclusions and Discussion

The results of this study—and the conclusions drawn by the researcher—are discussed according to the individual research questions that guided the study.

#### *Research Question 1*

*Is there a relationship between pre-K attendance and student achievement?*

Students who did not attend pre-K had higher fourth-grade LEAP scores in English language arts and math than their peers who attended pre-K. Based on the results of this study, one may conclude that pre-K attendance does not improve student achievement. The review of literature both supports and contradicts the findings in this study. According to the review of literature, Barnett (2008) surmised children who attended the Child-Parent Center had increased test scores through at least middle school. Frede (2011) suggested that preschool education is found to increase cognitive abilities and contributes to increased test scores. Literature obtained from Schweinhart

(2005) indicated students who attended the Perry Preschool Program had an increase on achievement tests at ages 9, 10, and 14 years. In direct contrast to Barnett (2008), Frede (2011), and Schweinhart (2005), the Strategic Research Group (2011) found no significant increase in test scores for third- through fifth-graders who attended pre-K in the State of Tennessee. Since a vast amount of literature supports the link between pre-K attendance and student achievement, this researcher would suggest continued research in this arena.

### *Research Question 2*

*Is there a relationship between gender, pre-K attendance, and student achievement?* The quantitative component of this study indicated females achieved higher on English language arts scaled scores on the LEAP than males regardless of pre-kindergarten attendance. Furthermore, the achievement gap is wider for students who attended pre-K when compared to those who did not attend pre-K. On the math portion of the LEAP, students who did not attend pre-K achieved higher scores regardless of gender. On the qualitative component of this study, 50.9% of teachers indicated that males benefitted more than females from pre-K attendance. Mixed results were reported (pertaining to this topic) in the literature reviewed. Maldonado (2008) conducted a study examining how males versus females scored on the Texas Assessment of Knowledge and Skills (TAKS). The study focused on third-grade English language arts and math scores. Based on gender, no statistical significance was found among students who attended pre-K and students who did not attend pre-K (Maldonado, 2008). A study conducted by Anderson (n.d.) found that females showed substantial short- and long-term benefits from pre-K; however, males showed no long-term benefits. The results of this study and previously cited studies could prove

beneficial in determining if differences in pre-K curriculum are warranted for female and male students.

### *Research Question 3*

*Is there a relationship between the socioeconomic status of students who attended pre-K and student achievement?* Students from middle- or high-socioeconomic backgrounds scored higher on both the English language arts and math portions of the LEAP regardless of pre-K attendance. Percentages indicated that 69.6% of students in this study who attended pre-K were from low-socioeconomic backgrounds. A vast amount of literature contradicts the findings of this study. Magnuson et al. (2007) found that pre-K had few lasting effects on the abilities of middle- or high-income students; however, larger benefits were found for children from low-socioeconomic backgrounds. Gormley et al. (2005) conducted a study in Tulsa, Oklahoma, public schools. The study concluded that students from all income brackets equally benefitted from attending pre-K (2005). The Strategic Research Group conducted a study in Tennessee. Results indicated students from low-socioeconomic backgrounds who attended pre-K made stronger gains than students who did not attend pre-K (2011). With a large amount of literature directly opposing the results of this study, this researcher would recommend additional studies in this arena.

### *Research Question 4*

*Is there a relationship between pre-K attendance and student retention?*

Students who attended public school pre-K had a 62.2% promotion rate and a 37.8% retention rate. Students who did not attend public school pre-K had a 100% promotion rate. The study district has a transitional first (T1) grade program. Children who are lacking in maturation at the end of kindergarten are placed in T1, as opposed to being

moved to first grade. Though this is not retention in the true sense of the word, the district counts a child who has attended T1 as being retained. Literature collected for this study contradicts the findings in relation to pre-K attendance and student retention. This research study only focused on data from public school pre-K; therefore, data may be skewed if students attended a private school pre-K program. Gilliam and Zigler (2004) researched pre-K programs across 18 states and discovered reduced grade retention to be robust among students who attended pre-K. Temple and Reynolds (2007) reported children who had attended the Abecedarian program had a 24% less rate of retention than children who did not attend the program. The LA4 Longitudinal Report indicated approximately 36% of students who participated in pre-K were less likely to be retained in kindergarten (Wat, 2010).

#### *Research Question 5*

*Do students who attended pre-K display better kindergarten readiness skills than their peers who did not attend pre-K?* The qualitative data collected from kindergarten teachers indicated 56.1% of teachers could not identify students who had attended pre-K when compared to students who had not attended pre-K based on kindergarten readiness skills. However, at the end of kindergarten, 49.1% of teachers observed that students who had attended pre-K had an increase in gains, as compared to students who had not attended pre-K. In a study conducted by Magnuson et al. (2007), pre-K students who attended the Early Childhood Longitudinal Study had an increase in English language arts and math scores at school entry. The Center for Public Education (2008) reported that students who attended pre-K showed significant increases in letter-word identification, spelling, and applied problems. In Florida, assessments given

during the first 30 days of kindergarten indicated that 74% of children who had completed pre-K were ready for kindergarten (Florida Department of Education, 2010).

### Limitations

Data for this study were acquired from one school district. The district was large, and the population offered a diverse mixture of socioeconomic backgrounds. However, ethnicities were not as diversified. Ethnicities in the region included 83.6% White, 11.4% Black, and 5% American Indian, Asian, or Hispanic (U.S. Census Bureau, 2012). Future research related to this topic could focus on a more ethnically diverse population.

The qualitative component of this study relied upon teachers completing questionnaires. For the compilation of school demographics, it was the intention of this researcher to color-code questionnaires. Color-coding questionnaires would provide information on which schools participated in the study and which schools did not participate. Building level administrators conveyed apprehension at having the questionnaires color-coded. In an effort to garner support from school principals and teachers, this researcher chose not to color-code questionnaires; therefore, tracking of demographics was not possible.

This study was limited to data obtained from the district office. The information available provided a list of students who attended public school pre-K in the school district. Information on private school pre-K attendance was unavailable; therefore, an unspecified number of students who were coded as not having attended pre-K actually attended pre-K in the private arena. These students were from middle and high socioeconomic backgrounds. Limited funding prohibited public school pre-K attendance for students from middle or high socioeconomic backgrounds. If private

school pre-K attendance data had been available, the outcome of this study may have been statistically different.

In the district where this research study was conducted, pre-K is available to a limited number of students based on socioeconomic status and special needs. Students from low-socioeconomic backgrounds attributed to 70% of the study population, while students from middle- or high-socioeconomic backgrounds attributed to 30% of the study population. If the population contained a more heterogeneous group of students, the outcome of this study may have been different.

### Recommendations for Policy and Practice

Research studies provide critical information for decision makers. This research study and the accompanying literature review were conducted in an effort to provide additional information to those who set educational policy. Information presented in this study will also be useful to practitioners as they implement new programs or make changes to current programs.

Building level administrators can use the results of this study, as well as the findings discussed in the review of literature, to determine methods that will improve current pre-K practices. Teacher articulation among pre-K and kindergarten teachers is essential. Pre-K teachers also need to have regularly scheduled grade level meetings to enable experienced teachers to share their knowledge with new teachers and new teachers to share innovative techniques with experienced teachers. This study indicated females scored higher on English language arts than males. A building level administrator may wish to schedule classes in a manner that would allow a lower female-to-male ratio. Both females and males who did not attend pre-K achieved higher on the math section of the LEAP than their peers who attended pre-K. Principals



may choose to purchase tutorial programs and enrichment materials that focus specifically on math. The hiring process often involves 15 or 20 minutes interviewing a prospective teacher before making a hiring decision. Such a huge responsibility is given to a person whom the principal has spent little time. It is imperative that the building level administrator observe numerous times, both announced and unannounced, in an effort to determine a teacher's strengths as well as any areas of weakness.

Superintendents have the arduous task of incorporating policies and practices that will have the greatest impact on student achievement. Research provides a solid basis for a superintendent to approach the board requesting support for new practices. In today's economy, one must be cognizant of the most cost-efficient methods that will garner the highest results. Superintendents may use this research study, and the accompanying literature review, to make determinations regarding pre-K. A pre-K curriculum change may be an effective method of increasing student achievement. Superintendents may choose to appoint a committee to conduct further research on this subject. It would be worthwhile to investigate achievement of students who attended pre-K at a Head Start program and those who attended a private pre-K program. A comparison of Head Start, private school, and public school pre-K programs is essential.

This study can provide school boards with solid information related to pre-K attendance and student achievement. Results of this study indicated students from middle- or high-socioeconomic backgrounds have higher LEAP math and English language arts scores than children from low-socioeconomic backgrounds regardless of pre-K attendance. However, teacher observations suggest that students from low-socioeconomic backgrounds who attend pre-K are better socially and emotionally

prepared for kindergarten than their peers who do not attend pre-K. Armed with this knowledge, school boards may choose to increase funding for pre-K programs to ensure all students from low-socioeconomic backgrounds are provided a free public pre-K education.

### Recommendations for Future Research

Future research related to this topic should include data from private and public schools in the district. Families need to be surveyed to accurately determine if a child attended pre-K prior to entering public school kindergarten. Perhaps, the same type of study would produce different results if conducted using data that included private school pre-K attendance. Based on results of this study, public school pre-K attendance is not producing the powerful results necessary for student achievement in later grades. An alignment of the curriculum between public and private school pre-K is necessary.

Data collected regarding students who attended Head Start would provide an interesting research study. It would be worthwhile to determine the differences in academic achievement using Head Start, private school pre-K, and public school pre-K as variables. Results of this type of study would be beneficial to those who set policy. Additional subgroups of students may include special education and ethnicities as variables. Including special education status of students in a study, as well as ethnicities, could provide useful information.

Further research could be conducted to measure the performance of this pre-K group at the second-grade level. It would be beneficial to determine if students who attended pre-K had greater academic achievement at second grade than students who did not attend pre-K. This information could benefit administrators in determining the point when academic gains are greatest.

Further research should be conducted in order to examine the alignment of the pre-K through fourth-grade curriculum. Skills that are introduced in pre-K must be reinforced, mastered, and aligned with state assessments. Research could include an examination of the professional development conducted for pre-K teachers and the alignment of such to the curriculum. Pre-K curriculum standards need to be examined and, if necessary, changed.

### Summary

This research study analyzed the relationship between pre-K attendance and student achievement. The study included both quantitative and qualitative data. Data were collected from a large suburban district in a local geographic region and included the 2009-2010 fourth grade Louisiana Educational Assessment Program (LEAP) English language arts (ELA) and math scaled scores. Gender, SES, and grade retention through fourth grade were collected on every child who had taken the 2009-2010 LEAP. Data also identified students who had attended pre-K in the public school system. The qualitative component of the study involved a teacher questionnaire. The questionnaire was relative to kindergarten readiness skills and teachers' opinions on how these skills differ from children with a pre-K background versus those without a pre-K background.

The total population for this study included 3,112 subjects. Students who had attended pre-K in the public school district where this study was conducted totaled 754 (22%), while those who did not attend public school pre-K in the district totaled 2,358 (68%). Statistically significant results were obtained when testing pre-K attendance against LEAP math and ELA scaled scores. Students who did not attend pre-K had higher scores in both math and English language arts. Gender and pre-K attendance

together proved to be statistically significant, with students who did not attend pre-K scoring higher on both math and ELA sections of the LEAP than students who attended pre-K. A significant main effect was found for SES. Students from middle- or high-socioeconomic backgrounds scored higher on the English Language arts and math portions of the LEAP than students from low socioeconomic backgrounds regardless of pre-K attendance. However, students who did not attend pre-K scored higher in English and math than students who attended pre-K. A significant interaction was found for pre-K attendance and student retention. Students who attended public school pre-K had a 62.2% promotion rate and a 37.8% retention rate. Students who did not attend pre-K had a 100% promotion rate.

The qualitative data revealed that males who attend pre-K display improved kindergarten readiness skills than females. Students from low-SES background appear to reap greater benefits from pre-K than students from middle- or high-SES backgrounds. Teachers indicated that most of the benefits gained by students from low-SES backgrounds were in the area of social/emotional.

# APPENDIX A

## QUESTIONNAIRE

If extra space is needed, please use the back of this page or add pages of your own.

1. What do you expect a child to know and be able to do upon entering kindergarten?
2. When a child enters kindergarten, can you accurately determine which students participated in a pre-K program? If so, what are the key indicators?
3. At the end of the kindergarten year, do you see a difference in the gains made by students who attended pre-K, as compared to the gains made by students who did not attend pre-K? If so, in what areas?



## APPENDIX B

### IRB APPROVAL



**INSTITUTIONAL REVIEW BOARD**  
 118 College Drive #5147 | Hattiesburg, MS 39406-0001  
 Phone: 601.266.6820 | Fax: 601.266.4377 | [www.usm.edu/irb](http://www.usm.edu/irb)

#### NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 11110705  
 PROJECT TITLE: Pre-Kindergarten Education: Is There a Relationship  
 Between Pre-Kindergarten Participation and Student Achievement?  
 PROJECT TYPE: Dissertation  
 RESEARCHER/S: Carol Barlow  
 COLLEGE/DIVISION: College of Education & Psychology  
 DEPARTMENT: Educational Leadership  
 FUNDING AGENCY: N/A  
 IRB COMMITTEE ACTION: Expedited Review Approval  
 PERIOD OF PROJECT APPROVAL: 11/07/2011 to 11/06/2012

**Lawrence A. Hosman, Ph.D.**  
**Institutional Review Board Chair**

## APPENDIX C

## LETTER TO THE SUPERINTENDENT

Dear Superintendent Folse:

I am currently enrolled in the doctoral program at The University of Southern Mississippi and have completed my coursework. In the near future, I will be conducting a research project associated with my dissertation. The topic for my study is *Pre-Kindergarten Education: Is There a Relationship Between Pre-Kindergarten Participation and Student Achievement?* The study will focus on fourth-grade LEAP math and English language arts' scores (ELA), student retention rates, socioeconomics, gender, and pre-kindergarten enrollment. Another component of my study will focus on the perspectives of kindergarten teachers' relating to readiness skills.

I am requesting permission to use your school district for my study. I would greatly appreciate your approval to take the measures necessary to proceed with my project.

For data collection, I will need to contact Information Technology. The information needed will include 2010 LEAP math and ELA scores, retention rates, socioeconomics, and gender for all fourth graders in the district. I also will have to be in contact with the pre-kindergarten supervisor to obtain information regarding pre-kindergarten enrollment for the 2004-2005 school year.

In an effort to keep students' identity confidential, I will request that all information contain student identification numbers in lieu of names. The final component of my study will involve asking kindergarten teachers in your district to complete a questionnaire. The questionnaires will be color-coded in order to keep identity of participant confidential. All data will be kept confidential, with only me and my committee members having access to the information.

Once the data are analyzed and the dissertation is complete, I will make the findings available to you. I truly appreciate your time and assistance in this matter. If you choose to allow me to proceed with the collection of data and the use of that information in my project, please sign the attached form and mail it back to me as soon as possible. For your convenience, I am enclosing a self-addressed, stamped envelope.

If you have any questions, please feel free to contact me via email or telephone.

Sincerely,

Carol G. Barlow  
1-985-630-1288  
carolbarlow@bellsouth.net



## APPENDIX D

## SUPERINTENDENT CONSENT FORM



W. L. "Trey" Folsa, III  
Superintendent

District	Board Members
4	Stephen J. "Jack" Loup, III, President
15	Mary K. Bollsario, Vice President
7	Neal M. Hernandez
2	Elizabeth B. Heitz
3	Michael J. Dirmann
5	Charles T. Harrell
6	Reanne V. Tipton
7	Willie B. Jeter
8	Peggy H. Seeley
9	Robin P. Mullett
10	Ronald "Ron" Bellencourt
11	Robert E. "Boo" Womack
12	James "Ronnie" Panks, Sr.
13	John C. Lombarque
14	Kay A. Alfred

## SUPERINTENDENT CONSENT FORM

By signing and returning this form, I give Carol Barlow permission to conduct a research study in the St. Tammany Parish School District. Ms. Barlow has permission to meet with kindergarten administrators and request that they pass out a questionnaire to each kindergarten teacher. Ms. Barlow also has permission to meet with the Director of Information Technology to obtain 2009-2010 fourth grade LEAP math and English language arts' scaled scores; retention information; socioeconomic status; and gender for each child. Ms. Barlow will also need a list of students enrolled in pre-kindergarten during the 2004-2005 school year. Individual student data will be identified by the child's identification number.

  
W. L. "Trey" Folsa, III  
Superintendent

*Learning to Last a Lifetime.®*

APPENDIX E  
TEACHER LETTER

Dear Kindergarten Teacher:

I am currently enrolled in the doctoral program at The University of Mississippi and have completed my coursework. In the near future, I will be conducting a research project associated with my dissertation. The topic for my study is *Pre-Kindergarten Education: Is There a Relationship Between Pre-Kindergarten Participation and Student Achievement?* The study will focus on fourth-grade LEAP math and English language arts' scores, student retention rates, socioeconomics, gender, and pre-kindergarten enrollment. Another component of the study will focus on the perspectives of kindergarten teachers' relating to readiness skills.

Attached is a short questionnaire. I would greatly appreciate your taking the time to complete the questionnaire. It is not necessary to place your name on the questionnaire, as it is color-coded for confidentiality purposes.

I spent many years as a classroom teacher; therefore, I know your time is very valuable. It is with the utmost respect for your role as a kindergarten teacher that I request your assistance in this project. Please complete the questionnaire, place it in the attached self-addressed, stamped envelope and mail it back to me by

---

Thank you again for your assistance. If you have any questions, please feel free to email me.

Sincerely,

Carol G. Barlow  
carolbarlow@bellsouth.net

## REFERENCES

- Ackerman, D. J. (2005, March). *Prepared for kindergarten: What does "readiness" mean?* New Brunswick, NJ: National Institute for Early Education Research.
- Alaska Department of Education and Early Development. (2011). *The Alaska pilot pre-kindergarten project (AP3) project evaluation—year one*. Juneau: Alaska Department of Education.
- American Youth Policy Forum. (n.d.). *Raising minority academic achievement abecedarian program*. Retrieved from <http://www.aypf.org/publications/rmaa/pdfs/Abecedarian.pdf>
- Anderson, M. L. (n.d.). *Multiple inference and gender differences in the effects of early intervention: A reevaluation of the Abecedarian, Perry Preschool, and early training projects*. Berkely, CA: University of California at Berkely.
- Andrews, S. P., & Slate, J. R. (2001, May 17). Prekindergarten programs: A review of the literature. *Current Issues in Education*, 1-46. Phoenix, AZ: Arizona State University.
- Ashford, E. (2007). The concept of universal pre-kindergarten is gaining momentum. *Education Digest*, 73(2), 22-25. Retrieved from [http://vnweb.hwwilsonweb.com/logon lynx.lib.usm.edu/hww/results/results\\_single\\_fitPES.jhtml?](http://vnweb.hwwilsonweb.com/logon lynx.lib.usm.edu/hww/results/results_single_fitPES.jhtml?)
- Barnett, W. A., & Masse, L. (2007). Comparative benefit-cost analysis of the Abecedarian program and its policy implications. *Economics of Education Review*, 113-125.
- Barnett, W. S. (2006). *Benefits of preschool for all*. New York, NY: National Institute for Early Education Research.

- Barnett, W. S. (2008, September). *Preschool education and its lasting effects: Research and policy implications*. New Brunswick, NJ: [Publisher].
- Barnett, W. S., Jung, K., Wong, V., Cook, T., & Lamy, C. (2007). *Effects of five state prekindergarten programs on early learning*. National Institute for Early Education Research, Rutgers, the State University of New Jersey. Retrieved from <http://nieer.org/docs/index.php?DocID=129>
- Belfield, C. R., Nores, M., Barnett, W. S., & Schweinhart, L. (2006). The high/scope Perry preschool program: Cost-benefit analysis using data from the age-40 follow-up. *Journal of Human Resources*, 162-190.
- Boeree, D. C. (n.d.). *Personality theories*. Retrieved from Webspac: <http://webspac.ship.edu/cgboer/piaget.html>
- Buenafe, A. Q. (2011). *Pre-k as a school turnaround strategy*. Washington, DC: Pew Center on the States.
- Camilli, G., et al. (2010, March). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112(3), 579-620.
- Center for Early Education and Development at the University of Minnesota and the Federal Reserve Bank of Minneapolis. (n.d.). *Early childhood research collaborative*. Retrieved from <http://www.earlychildhoodrc.org/resources/illinois.cfm>
- Center for Public Education. (2008). *The research on pre-k*. Retrieved from <http://www.centerforpubliceducation.org/Main-Menu/pre-kindergarten/prekindergarten>

Chicago Child-Parent Center study celebrates coming of age. (2007, August 29).

Prevention Action. Retrieved from <http://preventionaction.org>

Chicago Public Schools. (2010, January 15). *Chicago Public Schools: Child-parent center (CPC)*. Retrieved from <http://www.cps.edu/schools/preschools/pages/childparentcenter.aspx>

Child Trends Research Agency. (2007, December 11). *Early training project*.

Retrieved from <http://www.childtrends.org/lifecourse/programs/earlytr.htm>

Colorado Department of Education. (2010). *Colorado preschool program: 2010-11 handbook*. Retrieved from [http://www.cde.state.co.us/cpp/download/CPPDocs/2010-11\\_CPPHandbook.pdf](http://www.cde.state.co.us/cpp/download/CPPDocs/2010-11_CPPHandbook.pdf)

Consortium. (2011). In *Merriam-Webster dictionary*. Retrieved from [www.merriam-webster.com/dictionary/consortium](http://www.merriam-webster.com/dictionary/consortium)

Delaware Department of Education. (n.d.). *Overview of Head Start/ECAP outcomes study: State of Delaware*. Retrieved from [http://www.doe.state.de.us/infosuites/students\\_family/earlychildhood/files/ECAP06%2007%20State%20Report.pdf](http://www.doe.state.de.us/infosuites/students_family/earlychildhood/files/ECAP06%2007%20State%20Report.pdf)

Department of Early Childhood Education, Chicago Public Schools. (2011, July 11). *Chicago longitudinal study program overview and history*. Retrieved from <http://www.cehd.umn.edu/icd/cls/History.htm>

Dillon, S. (2011, September 23). Obama to waive parts of No Child Left Behind. *New York Times*. Retrieved from <http://www.nytimes.com/2011/09/23/education/23educ.html>

Education Law Center. (2010). *Education justice: Missouri*. Retrieved from <http://www.educationjustice.org/states/missouri.html>

- Ethnic. (2011). In *Merriam-Webster dictionary*. Retrieved from <http://www.merriam-webster.com/dictionary/ethnic>
- Fitzpatrick, M. D. (2008). Starting school at four: The effect of universal pre-kindergarten on children's academic achievement. *B.E. Journal of Economic Analysis and Policy*, 1-38.
- Florida Department of Education. (n.d.a). *Florida's voluntary prekindergarten (VPK) education program*. Retrieved from <http://www.flvpkonline.org>
- Florida Department of Education. (n.d.b). *What is VPK?*. Retrieved from [http://www.vpkhelp.org/index2.php?option=com\\_content&task=view&id=12&pop=1&page=08Itemid=26](http://www.vpkhelp.org/index2.php?option=com_content&task=view&id=12&pop=1&page=08Itemid=26)
- Florida Department of Education. (2010, March 25). *Florida's VPK students are better prepared for success in kindergarten*. Retrieved from [http://www.fldoe.org/news/2010/2010\\_03\\_25-2.asp](http://www.fldoe.org/news/2010/2010_03_25-2.asp)
- Frede, E. A. (2011, May-June). *Why pre-k is critical to closing the achievement gap*. Alexandria, VA: National Association of Elementary School Principals.
- Frede, E. K. (2009). *The APPLES blossom: Abbott preschool program longitudinal effects study (APPLES) preliminary results through 2nd grade*. New Brunswick, NJ: National Institute for Early Education Research.
- Georgia Department of Early Care and Learning. (n.d.). *History of Georgia's pre-k program*. Retrieved from <http://dec.al.ga.gov/Prek/AboutPrek.aspx>
- Gilliam, W. S., & Zigler, E. F. (2004). *State efforts to evaluate the effects of prekindergarten*. New Haven, CT: Yale University Child Study Center.
- Gormley, W. T., Gayer, T., Phillips, D., & Dawson, B. (2005). The effects of universal pre-k on cognitive development. *Developmental Psychology*, 872-884.

Illgen, S. (n.d.). *Early Childhood in Oklahoma Oklahoma's pre-kindergarten program.*

Retrieved from <http://sde.state.ok.us/Programs/ECEduc/pdf/PreKHistory.pkf>

Iowa Department of Education. (2011, January). *Statewide voluntary preschool*

*program for four-year-old children.* Retrieved from [www.iowa.gov/educate](http://www.iowa.gov/educate)

Jacobson, L. (2008). States eye research to shape pre-K priorities. *Education Week*,

27(43), 20. Retrieved from [http://vnweb.hwwilsonweb.com/logon lynx.lib.](http://vnweb.hwwilsonweb.com/logon lynx.lib.usm.edu/hww/results/results_single_ftPES.jhtml?)

[usm.edu/hww/results/results\\_single\\_ftPES.jhtml?](http://vnweb.hwwilsonweb.com/logon lynx.lib.usm.edu/hww/results/results_single_ftPES.jhtml?)

Jensen, E. (2009). *Teaching with poverty in mind: What being poor does to kids'*

*brains and what schools can do about it.* Alexandria, VA: Association for

Supervision and Curriculum Development.

Kentucky Department of Education. (2011, June 21). *Kentucky Department of*

*Education Preschool.* Retrieved from <http://www.education.ky.gov/KDE/>

[Instructional+Resources/Preschool/](http://www.education.ky.gov/KDE/)

KIDS COUNT Data Center. (2009a). *Children in poverty-Louisiana.* Annie E. Casey

Foundation. Retrieved from <http://datacenter.kidscount.org/data/bystate>

[/Map.aspx?state=LA&loct=5&ind=1518&dtm=2&tf=38](http://datacenter.kidscount.org/data/bystate)

KIDS COUNT Data Center. (2009b). *Profile for St. Tammany Parish (school district)-*

*Louisiana.* Annie E. Casey Foundation. Retrieved from

<http://datacenter.kidscount.org/data/bystate/stateprofile.aspx?state=LA&loc=81>

59

Kirp, D. L. (2007). *The sandbox investment.* Cambridge, CT : Harvard University

Press.

LaMorte, M. W. (2007, February 26). *School law: Cases and concepts* (9<sup>th</sup> ed.).

Boston, MA: Allyn & Bacon.

Locker, R. (2011, February 24). New Vanderbilt study shows strong gains by kids who attend pre-kindergarten. *Education Week*.

Louisiana Department of Education. (n.d.). *District and state accountability reports: Louisiana Department of Education*. Retrieved from [http://www.doe.state.la.us/data/district\\_accountability\\_reports.aspx](http://www.doe.state.la.us/data/district_accountability_reports.aspx)

Louisiana Department of Education. (n.d.b). *Early childhood development programs: Louisiana Department of Education*. Retrieved from [http://www.doe.state.la.us/offices/literacy/childhood\\_8g.html](http://www.doe.state.la.us/offices/literacy/childhood_8g.html)

Louisiana Department of Education. (n.d.c). *Early childhood development programs: Louisiana Department of Education*. Retrieved from [http://www.doe.state.la.us/offices/literacy/childhood\\_8g.html](http://www.doe.state.la.us/offices/literacy/childhood_8g.html)

Louisiana Department of Education. (n.d.d). *The Cecil J. Picard LA4 early childhood program: Louisiana Department of Education*. Retrieved from [http://www.doe.state.la.us/offices/literacy/cjp\\_la4.html](http://www.doe.state.la.us/offices/literacy/cjp_la4.html)

Louisiana Department of Education. (n.d.e). *The nonpublic schools early childhood development program (NSECD): Louisiana Department of Education*. Retrieved from [http://www.doe.state.la.us/offices/literacy/childhood\\_nonpublic.html](http://www.doe.state.la.us/offices/literacy/childhood_nonpublic.html)

Louisiana Department of Education. (2010a). *Adequate yearly progress*. Retrieved from <http://www.doe.state.la.us/topics/ayp.html>

Louisiana Department of Education. (2010b). *Early childhood development programs: Cecil J. Picard LA4 early childhood program*. Retrieved from [http://www.doe.state.la.us/offices/literacy/cjp\\_la4.html](http://www.doe.state.la.us/offices/literacy/cjp_la4.html)



Louisiana Department of Education. (2010c). *Early childhood development programs:*

*The 8(g) student enhancement block grant program.* Retrieved from

[http://www.doe.state.la.us/offices/literacy/childhood\\_8g.html](http://www.doe.state.la.us/offices/literacy/childhood_8g.html)

Louisiana Department of Education. (2010d). *Interpreting LEAP test scores:*

*Louisiana Department of Education.* Retrieved from

[http://www.doe.state.la.us/topics/interpreting\\_scores\\_leap.html](http://www.doe.state.la.us/topics/interpreting_scores_leap.html)

Louisiana Department of Education. (2010e). *Louisiana's accountability system.*

Retrieved from [http://www.doe.state.la.us/topics/understanding\\_acct.html](http://www.doe.state.la.us/topics/understanding_acct.html)

Louisiana Department of Education. (2010f). *Louisiana's statistics-at-a-glance:*

*Louisiana Department of Education.* Retrieved from

<http://www.doe.state.la.us/topics/sag.html>

Louisiana Department of Education. (2010g). *Public school student enrollment.*

Retrieved from <http://www.louisianaschools.net/offices/>

[infomanagement/student\\_enrollment\\_data.html](http://www.louisianaschools.net/offices/infomanagement/student_enrollment_data.html)

Louisiana Department of Education. (2010h). *Recovery school district: Louisiana's*

*turnaround zone.* Retrieved from <http://www.doe.state.la.us/divisions/rsd/>

Louisiana Department of Education. (2010i). *School report cards: Louisiana*

*Department of Education.* Retrieved from

[http://www.louisianaschools.net/data/school\\_accountability\\_reports\\_9010.aspx](http://www.louisianaschools.net/data/school_accountability_reports_9010.aspx)

Louisiana Department of Education. (2010j). *2009-2010 school report cards.*

Retrieved from <http://www.louisianaschools.net/lde/uploads/ReportCards>

[/ReportCard10/Principalsp/052008\\_Principal\\_RC.pdf](http://www.louisianaschools.net/lde/uploads/ReportCards/ReportCard10/Principalsp/052008_Principal_RC.pdf)

- Louisiana Department of Education. (2011, January). *Louisiana's kindergarten readiness definition*. Retrieved from [http://www.doe.state.la.us/offices/literacy\\_sga.html](http://www.doe.state.la.us/offices/literacy_sga.html)
- Magnuson, K. A., Ruhm, C., & Waldfogel, J. (2007). Does prekindergarten improve school preparation and performance. *Economics of Education Review*, 33-51.
- Maine Department of Education. (n.d.). *Maine Department of Education—four-year old program: History of four-year old program*. Retrieved from <http://www.maine.gov/education/fouryearold/history.html>
- Maldonado, W. (2008). *The impact of pre-kindergarten enrollment on student performance as identified by Third Grade Reading and Math Texas Assessment of Knowledge and Skills (TAKS) scores among selected Title I elementary schools*. College Station, TX: Texas A & M University.
- Maryland State Department of Education. (2009). *Maryland's preschool for all business plan: Maryland State Department of Education*. Retrieved from <http://www.msde.maryland.gov/NR/rdonlyres/50E778B3-88E6-4276-8CA4-981A50B7431D/22305/PreKBusPln1209.pdf>
- Massachusetts Department of Early Education and Care. (2009, December). *Universal pre-kindergarten (UPK) pilot grant program*. Retrieved from [http://www.mass.gov/Eeoe/docs/EEC/programs\\_licensing/20091217\\_upk\\_factsheet.pdf](http://www.mass.gov/Eeoe/docs/EEC/programs_licensing/20091217_upk_factsheet.pdf)
- Minnesota Department of Education. (2011, March 9). *School readiness FY 2010 participant data*. Retrieved from <http://education.state.mn.us/mdeprod/groups/EarlyLearning/documents/Report/019953.pdf>

- Mooney, C. G. (2000). *Theories of childhood: An introduction to Dewy, Montessori, Erikson, Piaget, and Vygotsky*. St. Paul, MN: Redleaf.
- National Association of School Psychologists. (2003, April 12). *Position statement on student grade retention and social promotion*. Bethesda, MD: Author.
- National Child Care Information and Technical Assistance Center. (n.d.). *School readiness and transition to kindergarten*. Retrieved from <http://nccic.acf.hhs.gov/resource/school-readiness-and-transition-kindergarten>
- National Institute for Early Education Research. (2009). *The state of preschool 2009: State preschool yearbook*. New Brunswick, NJ: Rutgers Graduate School of Education.
- National Institute for Early Education Research. (2011). *Economic benefits of quality preschool education for America's 3- and 4-year olds*. New Brunswick, NJ: Rutgers Graduate School of Education. Retrieved from <http://nieer.org/resources/facts/index.php?FastFactID=6>
- National Research Council Institute of Medicine. (2000). *From neurons to neighborhoods*. City and State: Publisher.
- Nebraska Department of Education. (2010). *Early childhood education grant program: Ages 3-5, 2000-2010 state report*. Retrieved from [http://www.education.ne.gov/oec/pdfs/ec\\_grant\\_program\\_state\\_report.pdf](http://www.education.ne.gov/oec/pdfs/ec_grant_program_state_report.pdf)
- Nevada Department of Education. (2009, March). *Request for application March 2009 Nevada State Prekindergarten Education Program*. Retrieved from [http://www.nde.doe.nv.gov/SpecialEdResources/Pre-K\\_RFA\\_RY10.doc](http://www.nde.doe.nv.gov/SpecialEdResources/Pre-K_RFA_RY10.doc)

New Jersey Department of Education. (2008). *New Jersey Department of Education Division of Early Childhood Education end of year report: 2007-2008*.

Retrieved from <http://www.state.nj.us/education/ece/research/eoyr0708.pdf>

Office of Superintendent of Public Instruction-Washington. (n.d.a). *The Elementary and Secondary Education Act*. Retrieved from <http://www.k12.wa.us/ESEA/>

Office of Superintendent of Public Instruction-Washington. (n.d.b). *The Elementary and Secondary Education Act: Adequate yearly progress*. Retrieved from <http://www.k12.wa.us/ESEA/AYP/default.aspx>

Peisner-Feinberg, E. S. (2010). *Long-term effects of the North Carolina more at four pre-kindergarten program children's reading and math skills at third grade*. Chapel Hill, NC: FPG Child Development Institute, The University of North Carolina at Chapel Hill.

Pennsylvania Departments of Education and Public Welfare. (2010, October 28). *Pennsylvania Office of Child Development and Learning Annual Report 2009-2010*. Retrieved from [http://www.ocdelresearch.org/\\_layouts/OSSSearchResults.aspx?K=annual%20report%202009-2010&cs=This%20Site&u=http%3A%2Fwww.ocdelresearch.org](http://www.ocdelresearch.org/_layouts/OSSSearchResults.aspx?K=annual%20report%202009-2010&cs=This%20Site&u=http%3A%2Fwww.ocdelresearch.org)

Pew Center on the States. (n.d.). *About us*. Retrieved from <http://www.pewcenteronthestates.org/about.aspx>

Pre-K Now. (2010a). *ABC's of pre-k*. Retrieved from <http://www.preknow.org/resource/abc/timeline.cfm>

Pre-K Now. (2010b). *About pre-k*. Retrieved from <http://www.preknow.org/about/index.cfm>

- Pre-K Now. (2010c). *Advancing high quality, voluntary pre-kindergarten for all three- and four-year-olds*. Retrieved from <http://www.preknow.org/>
- Reynolds, A. J., Temple, J., Robertson, D., & Mann, E. (2002). *Age 21 cost-benefit analysis of the Title I Chicago Child-Parent Centers*. Madison, IL: Institute for Research on Poverty.
- Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B., & Hunt, S. (2008). *Facts and figures: Effective preschool and primary education 3-11 project (EPPE 3-11): Influences on children's cognitive and social development in year 6*. Rutgers, NJ: National Institute for Early Education Research, Rutgers, the State University of New Jersey. Retrieved from <http://nieer.org/docs/?DocID=254>
- Schweinhart, L. J. (2005). *The High/Scope Perry preschool study through age 40*. Ypsilanti, MI: High/Scope Press.
- Social Learning Theory (Bandura)/Learning Theories*. (n.d.). Retrieved from <http://www.learning-theories.com/social-learning-theory-bandura.html>
- Sousa, D. A. (2011). *How the brain learns*. Thousand Oaks, CA: Corwin Press.
- Southern Education Foundation. (2007). *Pre-kindergarten in the South*. Atlanta, GA: Author.
- Southern Education Foundation. (2010a). *Miles to go Mississippi: Prekindergarten*. Retrieved from [www.southerneducation.org](http://www.southerneducation.org)
- Southern Education Foundation. (2010b). *Preserving the region's comparative advantage in education*. Atlanta, GA: Author.
- Strategic Research Group. (2011). *Assessing the impact of Tennessee's pre-kindergarten program: Final report*. Columbus, OH: Author.

- St. Tammany Parish School Board. (2009a). *St. Tammany Parish Public Schools: A strategy for building capacity*. Retrieved from <http://www.stpsb.org/files/stpsstrategicplan.pdf>
- St. Tammany Parrish School Board. (2009b). *St. Tammany Parish Schools: Pre-kindergarten program information*. Covington, LA: Author. Retrieved from <http://www.stpsb.org>
- St. Tammany Parish School Board. (2009c). *St. Tammany Parish School Board Instruction Programs*. Retrieved from [http://www.stpsb.org/parents\\_programs\\_list.php?section=P](http://www.stpsb.org/parents_programs_list.php?section=P)
- St. Tammany Parish School Board. (2011). *St. Tammany 2010-2011 quick facts*. Retrieved from <http://www.stpsb.org/PDFFiles/quickfacts/QuickFacts2010-2011web.pdf>
- Temple, J. A., & Reynolds, A. (2007). Benefits and costs of investments in preschool education: Evidence from the Child-Parent Centers and related programs. *Economics of Education Review*, 126-144.
- Tennessee Department of Education. (n.d.). *2008-2009 pre-kindergarten fact sheet*. Retrieved from <http://www.tn.gov/education/prek/factsheet.html>
- Texas Early Childhood Coalition. (2008). *Cost-benefit summary investing in high quality early childhood education programs*. Austin, TX: Author.
- Texas Education Agency. (2011, April 15). *Texas prekindergarten data*. Retrieved from [http://www.tea.state.tx.us/index2.aspx?id=2147495267&menu\\_id=2147483718](http://www.tea.state.tx.us/index2.aspx?id=2147495267&menu_id=2147483718)

- Urahn, S. (2009, October 7). *Fund early childhood education*. Retrieved from <http://www.forbes.com/2009/10/07/fund-early-childhood-education-opinions-contributors-pre-kindergarten-pew.html>
- U.S. Census Bureau. (2012, January 31). *St. Tammany Parish quick facts from the US Census Bureau*. Retrieved from <http://quickfacts.census.gov/qfd/states/22/22103.html>
- U.S. Department of Education. (2010, May). *Supporting early learning*. Retrieved from <http://www2.ed.gov/policy/elsec/leg/blueprint/faq/early-learning.pdf>
- U.S. Department of Education. (2011, May 26). *ESEA reauthorization: A blueprint for reform*. Retrieved from <http://www2.ed.gov/policy/elsec/leg/blueprint/index.html>
- Vermont Department of Education. (2011, August 22). *Programs and services: Early education: Public preschool partnerships: Act 6—An Act relating to prekindergarten education*. Retrieved from [http://education.vermont.gov/new/html/pgm\\_earlyed/prekindergarten.html](http://education.vermont.gov/new/html/pgm_earlyed/prekindergarten.html)
- Virginia Department of Education. (n.d.). *Virginia preschool initiative*. Retrieved from [http://www.doe.virginia.gov/instruction/early\\_childhood/preschool\\_initiative/guidelines.pdf](http://www.doe.virginia.gov/instruction/early_childhood/preschool_initiative/guidelines.pdf)
- Wat, A. (2010). *The case for pre-K in education reform*. Washington, DC: Pre-K Now for the Pew Center on the the States.
- West Virginia Department of Education. (n.d.). *Building intentionality in a collaborative design and implementation for West Virginia universal pre-k*. Retrieved from <http://wvde.state.wv.us/osp/wvprek/>

Wisconsin Council on Children and Families. (2010). *The unique history of four-year-old kindergarten in Wisconsin*. Madison, WI: Author.